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ON

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DELIVERED BEFORE THE WEST KENT MEDICO-CHIRURGICAL SOCIETY ON DECEMBER 9TH, 1921,

BY

SIR JAMES PURVES STEWART, K.C.M.G., C.B., M.D.,
SENIOR PHYSICIAN TO THE WESTMINSTER HOSPITAL.

APART from the large proportion of our patients who suffer from primary respiratory affections, there are a considerable number who exhibit respiratory symptoms which are a consequence or complication of other maladies. I wish here to draw attention to that important group which we find occurring secondary to various diseases of the nervous system.

Respiratory Centres.

Let me first of all recall the nervous mechanism of respiration. The primary or lowest reflex respiratory centre is located in the lower part of the medulla oblongata, probably in the region of the visceral sensory nucleus of the fasciculus solitarius. This vital centre maintains ordinary breathing with its regular rhythm. During ordinary quiet breathing the inspiratory phase is an active muscular process of sucking air into the lungs; expiration, on the other hand, is a mere passive recoil of the lungs and thoracic cage, due to elasticity of their tissues.

The muscles involved in ordinary inspiration comprise, first, the diaphragm (innervated by the phrenic nerves whose motor nucleus in the spinal cord is at the level of the third, fourth, and fifth cervical segments); and second, the intercostal muscles (innervated by the series of anterior spinal roots from the first to the twelfth thoracic inclusive).

During forced or laboured respiration, and also in coughing and sneezing, various supplementary or accessory muscles, both inspiratory and expiratory, are called in, so as to reinforce the ordinary mechanism of inspiration and recoil.

Ordinarily the respiratory centre in the medulla is excited to activity by variations in the oxygen and carbon dioxide content of the blood. But it is also influenced by nervous stimuli. These stimuli reach it through various sensory nerves, chiefly along the vagus, which is the visceral sensory nerve of the respiratory tract, but also from almost any sensory nerve of the body; thus coughing and other respiratory reflexes can be induced by widely varying stimuli.

Perched above the vital respiratory centre in the medulla there is a higher reflex centre in the mid-brain, situated bilaterally in the mesial part of the optic thalami. This centre is concerned with emotional reflexes, such as laughing and sobbing, actions which involve modifications of the respiratory movements, accompanied at times by secretory phenomena, such as lacrymation, and even by visceral phenomena—for example, precipitate contractions of the bladder or bowel. Lastly, higher still, there are motor centres in the cerebral cortex, by means of which we can exercise a partial voluntary control over the lower respiratory mechanisms.

It is not surprising that these complex respiratory centres, situated as they are deep within the brain, medulla, and spinal cord, are liable to become disordered in diseases and injuries of the nervous system, whether the lesion implicates the central nervous system itself or the sensory or motor elements of the reflex respiratory arc.

Respiratory phenomena are commonly an accessory element in nervous diseases or injuries; sometimes, however, they may dominate, for a time, the whole clinical picture.

Respiratory Symptoms in Cerebral Lesions.

In *cerebral concussion*, say from a head injury, the morbid process consists in a sudden violent squeezing of the brain. This produces widespread cerebral anaemia and is associated with minute perivascular haemorrhages in various parts, notably in the grey matter of the cortex, the mid-brain, and the spinal cord. Besides the characteristic feeble frequent pulse, the subnormal temperature, and the low blood pressure of the concussed patient, we observe that his breathing is curiously slow, shallow, and irregular. Later on, when reactionary cerebral oedema supervenes, consciousness returns, the temperature rises, the pulse becomes full and bounding, and the respirations are now deeper than normal.

In cases of *apoplexy* from destructive cerebral lesions, whether due to haemorrhage, thrombosis, or embolism, in addition to the unilateral paralytic signs and symptoms, varying in distribution according to the location of the lesion, we often find those of coma. The probable explanation of this is that the brain as a whole is compressed by diffuse oedema surrounding the focal lesion, whilst beyond the oedematous zone there is an outlying zone of venous obstruction extending down towards the medulla, where it produces irritative symptoms. In such cases of cerebral compression, in which the patient is comatose with slow pulse and raised blood pressure, we note that his breathing is loud and stertorous in character. The snoring noise is due partly to flapping of the soft palate and partly to falling backwards of the root of the tongue. The noise of such stertorous breathing can often be alleviated by gently turning the patient on one side and propping up one shoulder, so that his tongue falls to one side instead of backwards. The patient, of course, remains unconscious as before, but his friends at the bedside are comforted by the quietening in his breathing. Sometimes in comatose patients of this sort we observe the highly ominous phenomenon of rhythmic breathing—the so-called Cheyne-Stokes type of respiration. In this there is a regular alternation of periods of activity and inactivity of the bulbar respiratory centre. During the inactive phase there is total cessation of breathing, which may last several seconds; then the respiratory movements gradually reappear, steadily becoming stronger and deeper. After persisting at a maximum for a few breaths the movements again subside, gradually declining in amplitude, until temporary complete apnoea is again reached. This process is repeated again and again until, in fatal cases, it is replaced by the true terminal breathing, popularly known as the "death-rattle." This is irregular and gasping in character, and to it coarse bubbling tracheal sounds are commonly superadded.

There is another less common form of cerebral haemorrhage in which the respiratory symptoms are peculiar and characteristic. This is what is known as *chronic subdural haemorrhage* or *delayed traumatic apoplexy*, a condition in which a collection of blood, often very large, gradually accumulates for days and weeks between the dura mater and the cerebral hemisphere. The blood is enclosed within a distinct fibrinous membrane, derived from the coagulated blood itself, which restricts the rate at which the haemorrhage spreads. The condition is sometimes bilateral. The bleeding is venous in origin, being a slow ooze from the short cerebral veins which enter the superior longitudinal sinus. Subdural haemorrhage of this sort is traumatic in origin, but the injury is often so trivial as to be overlooked. Following some slight blow on the head, after an interval, several days at least, the venous haemorrhage gradually becomes large enough to produce symptoms of intracranial pressure. Then headache supervenes, and gradually, a week or two later, the patient becomes dull and drowsy. After several weeks more the limits of mechanical compensation are reached and the symptoms change, rather suddenly, so that the drowsiness deepens into coma, perhaps ushered in by sharp pain in the head and by vomiting. This coma comes and goes, varying in intensity in a curious way, so that within a period of twenty-four hours the patient may pass from consciousness to coma and back again, being perhaps only a little dull mentally in the intervals. In this condition the respiration is very curious, for the patient, even when awake, breathes as if he were sound asleep—that is, his inspirations are deeper than normal and expiration is also slightly emphasized.

In the terminal coma of *cerebral meningitis*, *cerebral abscesses* or intracranial *tumours* the onset of stertorous breathing or of Cheyne-Stokes breathing is of grave omen and calls for prompt relief of intracranial pressure if this be still possible. In meningitis, especially in tuberculous basal meningitis, quite apart from threatened coma, it is not uncommon to observe a curious irregular type of respiration consisting in a want of harmony between the

diaphragm and the intercostal muscles, so that they no longer act synchronously.

In other varieties of coma—for example, post-epileptic coma, toxic coma (whether from outside poisons such as opium and alcohol, or from endogenous poisons as in uraemic or diabetic coma), in the coma of cerebral malaria and of sunstroke, and so on, stertorous breathing is one of the cardinal symptoms. In the coma of opium poisoning there is excessive slowness of respiration. Diabetic coma is often preceded for a day or two by air-hunger with slow, deep, sighing respirations and by uncontrollable drowsiness, gradually merging into coma with deep stertorous breathing.

Many years ago Hughlings Jackson made the interesting observation that in some cases of ordinary hemiplegia the chest wall during quiet respiration moves more freely on the paralysed side, corresponding as it were to the exaggeration of the deep reflexes in the paralysed limbs, whereas during voluntary deep inspiration the respiratory excursion, like other voluntary movements on the hemiplegic side, is distinctly less than normal.

Respiratory Symptoms in Bulbar Lesions.

In chronic nuclear diseases of the medulla—for example, in *chronic bulbar palsy*, whether this commences as a primary affair in the bulb or occurs as the upward extension of an amyotrophic lateral sclerosis of the spinal cord, or is due to syringobulbia or to tumours of the medulla—we observe that, if the vagal nuclei or nerves are implicated, the patient has a continuous dyspnoea, more or less severe, to which from time to time are superadded paroxysms of more intense dyspnoea. In such cases as the various bulbar nuclei, supplying the tongue, lips, palate, and larynx, become involved, the voice becomes feeble and monotonous. If the laryngeal abductors are paralysed, the glottis becomes narrowed to a mere slit, talking is an effort, respiration is laboured, even at rest, and the superaddition of the mildest bronchitis is liable to be fatal owing to difficulty in coughing up the bronchial secretions. If the adductors of the glottis are paralysed, phonation is lost and the patient may be unable to speak above a whisper; moreover, imperfect closure of the glottis favours the accidental inhalation of food particles with the possibility of a resulting bronchopneumonia. Curiously enough, syringomyelia with severe implication of the bulbar nuclei is sometimes compatible with prolonged survival.

Thus, I have in mind a lady who developed typical phenomena of syringomyelia in 1907, including dissociated anaesthesia of the upper limbs and neck. In 1909 she developed well-marked laryngeal stridor with bilateral, asymmetrical abductor paralysis, and became liable to attacks of acute dyspnoea. Nevertheless, she is still alive and able to get about in 1921, twelve years from the onset of her bulbar symptoms.

Acute or subacute bulbar palsy from affection of the bulbar nuclei or nerves is a much more serious affair. These nuclei may be implicated by the upward spread of an acute anterior poliomyelitis, or by the downward extension from the mid-brain of an epidemic encephalitis; or an acute ascending neuritis of toxic origin may spread up to the bulbar nerves as in Landry's paralysis, in which case respiratory paralysis begins with weakness of the abdominal and intercostal muscles, spreads up to the phrenic nerves innervating the diaphragm, and culminates in implication of the laryngeal and palatal nerves.

Respiratory Symptoms in Spinal Cord Lesions.

Progressive ascending lesions of the spinal cord in the dorso-cervical region are often accompanied by gradually increasing respiratory embarrassment as the muscles of inspiration become successively involved. Paralysis of the abdominal muscles favours the occurrence of meteorism or intestinal distension, pressing the diaphragm upwards, and as the intercostals cease from activity, more and more strain falls upon the diaphragm and upon the auxiliary muscles of inspiration which are called in to supplement its activity. Respiration becomes slower and more difficult, whilst expiration is shortened and followed by a long pause before the next inspiration sets in. Finally, when the upper level of the phrenic nucleus, the third cervical segment, is reached, the diaphragm is paralysed, as well as the intercostals, and the patient dies from asphyxia, since the supplementary muscles of respiration above that level (chiefly the sterno-mastoids, sterno-hyoids, sterno-thyroids, and the uppermost fibres of the trapezii) are rarely able by themselves to carry on adequate respiratory movements for more than a short time.

Symptoms such as we have just described may occur suddenly in fracture dislocations of the cervical vertebrae, and in wounds or haemorrhages within or around the *spinal cord;* they may come on acutely in acute poliomyelitis, in softening from arterial thrombosis (formerly misnamed "myelitis"), more gradually in abscesses or meningeal inflammatory deposits compressing the cord, and still more insidiously in tumours of the spinal cord and in primary degenerative diseases of the anterior cornual cells, as in amyotrophic lateral sclerosis.

An important group of respiratory troubles occurs as a complication of *tabes dorsalis* in the form of laryngeal crises. Sometimes the tabetic patient, even in the early, pre-ataxic stage of his malady, may have paroxysms of violent, causeless coughing coming on suddenly day or night, so severe that the patient becomes cyanosed for a few moments, has acute laryngeal spasm and may even become unconscious for a few moments. Later in the disease we meet with laryngeal palsies of various types, the commonest being a bilateral abductor paralysis. In such cases, even during quiet respiration, if we examine with the laryngoscope we can see distinct ataxia of the vocal cords, sometimes when they are moving outwards during phonation, sometimes as they come together for phonation, thereby rendering the voice tremulous. But it is especially in bilateral abductor palsy that laryngeal crises are liable to supervene in which, from some trivial catarrh or even without apparent exciting cause, the patient has a superadded laryngeal spasm producing cough and urgent dyspnoea, so urgent perhaps as to demand tracheotomy or intubation. A much rarer form of respiratory affection in tabes is a widespread apnoeic crisis, of which I have only seen one example.

This occurred in a tabetic patient of 42 who had suffered from unsteadiness of the legs for eight years. During the last three or four years he had been subject to occasional bladder crises and also to typical laryngeal crises. About a year before I saw him he developed occasional crises of a totally different sort, in which he became unconscious with cyanosis and stertorous breathing; but had been free from them for two months until his terminal attack in which I had the opportunity of witnessing several paroxysms.

The paroxysms occurred at intervals of about ten minutes. Each attack began with sudden total cessation of respiration, both diaphragmatic and intercostal. After a couple of minutes of this apnoea the patient gradually became cyanosed and then developed asphyxial convulsions, with clonic twitching of the face, trunk, and limbs. These passed off in a few seconds and were succeeded by inspiratory stridor, after which he gradually recovered consciousness with normal quiet respiration. The whole affair lasted about two minutes in all. The pulse persisted regularly but was rapid, 136 per minute, both during and between the successive attacks. These apnoeic crises recurred for two days, at intervals of ten to twenty minutes, in spite of assiduous treatment by full doses of atropine and strychnine, oxygen inhalations and occasional morphine. The individual attacks became shorter in duration, lasting only a minute in all, and the intervals between the paroxysms became longer, as much as twenty minutes, but the patient became stuporose and died from exhaustion on the fifth day.

Crises of sneezing are occasionally met with in tabes, accompanied by secretory phenomena in the form of rhinorrhoea and lacrymation, but, although these are exhausting to the patient, they do not cause danger to life such as occurs in the laryngeal and still more in the apnoeic crisis.

Laryngeal palsies occur in other degenerative nervous diseases, notably in disseminated sclerosis, and even in Friedreich's ataxia, but unlike tabetic cases, they are rarely accompanied by respiratory difficulties.

Respiratory Symptoms in Peripheral Nerve Lesions.

Respiratory troubles are sometimes met with in *peripheral neuritis* from toxic degeneration, whatever be the cause of such neuritis—for example, alcohol, diphtheria, arsenic, beri-beri, etc. Diphtheritic neuritis has a special tendency to select the nerves of the soft palate, giving a nasal twang to the voice and also causing difficulty in swallowing, with a special inclination to nasal regurgitation of fluids. Post-diphtheritic laryngeal palsies are less common, but we sometimes meet with them.

Diaphragmatic paralysis from peripheral neuritis is often overlooked, since the patient has little or no discomfort when at rest and shows merely a certain degree of acceleration in breathing. But as soon as he makes the

slightest physical effort he becomes markedly dyspnoeic. Once it is looked for, diaphragmatic palsy is easy of recognition, for we note that instead of the normal pushing forward of the epigastrium during inspiration, the abdominal wall is sucked inwards at each inspiration; meanwhile, there is marked over-action of the intercostals.

Paralysis of the intercostal muscles is rare in peripheral neuritis. In spinal cord lesions, however, it occurs fairly commonly, and the level of the lesion in the cord can often be accurately located by noting up to what level the intercostals are thrown out of action. In patients who are not too fat the healthy intercostal muscles can normally be felt to harden during deep inspiration. Absence of intercostal contraction, up to a certain level in the chest, is an important confirmatory sign in localizing lesions in the thoracic region of the spinal cord. When all the intercostals are paralysed, there is absence of expansion of the thoracic cage during inspiration.

Unilateral injuries of the *vagus*, and especially of its recurrent laryngeal fibres, are not uncommon in war time. The following is an example:

After a hand-to-hand encounter on the Salonica front in 1917 a Bulgarian prisoner was brought in with a bayonet wound in the back of his neck. The entry wound was immediately above the middle of the spine of the left scapula, three inches internal to the tip of the acromion process. There was no exit wound. Within a week a small pulsatile swelling became palpable at the outer side of the left sterno-mastoid, at the level of the cricoid cartilage; no thrill or bruit was made out over this little swelling, but it was evidently a small aneurysm in the neighbourhood of the common carotid artery. When admitted to hospital, a few hours after being wounded, the patient had surgical emphysema of the left upper chest and some haemoptysis from wounding of the apex of the lung. His voice was hoarse and he had paralysis of the left deltoid, biceps and supinator longus muscles, all supplied by the fifth cervical root. These muscles ultimately developed electrical reactions of degeneration, and there was also an area of cutaneous anaesthesia along the outer side of the left upper limb, from the middle of the deltoid to the thumb, corresponding to the fifth cervical root, together with another area of cutaneous hyperaesthesia above this, over the tip of the shoulder and side of the neck, corresponding to the fourth cervical root. The biceps jerk and the supinator jerk were absent on the left side, whilst the other reflexes, including the pronator jerk and triceps jerk, beyond the territory of the fifth cervical segment, were unimpaired. In addition, the left vocal cord was fixed in the cadaveric position, evidently from damage to the vagus or to its recurrent laryngeal branch within the left carotid sheath. The curious area of cutaneous hyperaesthesia might be accounted for as due to irritation of the sensory fibres of the phrenic nerve in the scar, but no motor impairment of the diaphragm could be detected.

Even in civilian practice, as the result of aortic aneurysm and other intrathoracic abnormalities, the *recurrent laryngeal nerve*, generally on the left side, is not uncommonly affected. The vagus nerve, including its recurrent laryngeal branch, may also be accidentally damaged in operations in the thyroid region.

Unilateral traumatic lesions of the *phrenic nerve* are much less frequent, but the inclusion of this nerve in a ligature has been known to produce inveterate cough from irritation of its sensory fibres. This nerve may also be implicated by bullet and bayonet wounds, causing unilateral paralysis of the diaphragm, easily verified by radioscopy.

Respiratory Symptoms from Muscular Affections.

In many of the primary myopathies the progressive general muscular enfeeblement may in time implicate the respiratory muscles and thereby diminish the patient's resistance to pulmonary affections, but localized respiratory paralysis does not occur. In *myasthenia*, on the other hand, all the features of bulbar palsy may be reproduced, including laryngeal palsies and respiratory failure. In this disease the paralytic symptoms vary in intensity from time to time; they are specially aggravated by fatigue and tend to clear up again after a period of rest. Unfortunately, with the respiratory muscles prolonged rest is unattainable, for whilst the patient's tired-out respiratory muscles are resting he may die of asphyxia, and as a matter of fact this is the common termination of myasthenia gravis.

Family periodic paralysis is another rare affection, sometimes appearing in successive generations of the same family, in which the patient, otherwise healthy, has attacks of profound flaccid paralysis of the limbs and trunk, lasting from a few hours up to a couple of days at a time. The affected muscles are not only paralysed, but for the time they become inexcitable to electrical stimulation—the so-called cadaveric reaction. In such attacks the intercostal muscles may be implicated, but, so far as I know, the diaphragm has never been affected, and therefore respiration can still be carried on.

Spasmodic Respiratory Affections.

The foregoing respiratory troubles are mainly paralytic. Let us now turn to the group of spasmodic respiratory affections. These may be due to disease either of the vegetative or the cerebro-spinal nervous system.

With regard to the vegetative nervous system I need only mention in passing the important spasmodic respiratory affection known as *asthma*, whose phenomena of laboured breathing consist essentially in spasm of the non-striped bronchial muscles, innervated as we now know by the dorsal motor nucleus of the vagus. In asthma the bronchial nerve centres react with abnormal violence to various blood-borne irritants, whether these be foreign proteins or bacterial toxins, also to peripheral irritants, nasal or otherwise, or even to psychical stimuli. The result is the asthmatic paroxysm, whose features are so familiar that I need not weary you by recapitulating them.

Coughing, yawning, sneezing, and hiccup are all of them reflex phenomena which may be induced in healthy individuals by appropriate stimuli. Of these, *hiccup* calls for special mention. Hiccup is a spasmodic myoclonic contraction of the diaphragm, occurring so suddenly that the glottis is momentarily closed by suction, producing the characteristic inspiratory noise or "hic." In slight cases of hiccup the affair is transient and produces only trivial discomfort. Sometimes, however, it may become so severe and prolonged as to induce profound and even fatal exhaustion. The reflex phenomenon of hiccup is sometimes excited by transient gastric or other abdominal irritation. It may also be due to disease of the peritoneum in the region of the diaphragm (the phrenic nerve being sensory as well as motor in function). Other cases of hiccup are due to central disease of the respiratory centres in the medulla. Thus, for example, it may be produced by the toxin of epidemic encephalitis. In encephalitic hiccup the myoclonic spasms may implicate not only the diaphragm and the constrictors of the glottis, but may even extend to the muscles of the abdominal wall and trunk. Hiccup of this encephalitic type may continue for days at a time, at the rate of twelve to fifteen hiccups per minute. Most cases clear up in three or four days, but others go on for weeks. Hiccup may also occur as a terminal symptom in tumours of the posterior fossa of the skull. Lastly, we sometimes meet with cases of hysterical hiccup. These are recognized by their history and concomitant phenomena, and the symptom promptly subsides under appropriate suggestive treatment.

Before dismissing the subject of cough we ought to recall whooping-cough or pertussis (an infective disease causing irritation of the coughing centres in the medulla) with its initial and terminal stages of catarrh and its paroxysms of rapidly succeeding expiratory coughs, followed by a single long-drawn inspiratory laryngeal "whoop." These paroxysms of alternate coughs and whoop follow one another in succession until the attack culminates either in temporary apnoea with cyanosis, or in vomiting.

Laryngismus stridulus, especially occurring in rickety children, consists in laryngeal inspiratory stridor and is often associated with tetany or painful tonic spasms in the hands and feet. Laryngismus itself may be regarded as a tetany of the adductor muscles of the larynx.

In the classical accounts of *tetanus* the respiratory muscles are described as becoming implicated in the general muscular spasm so that during a severe tetanic paroxysm not only is there opisthotonos, but also tonic spasm of the respiratory and laryngeal muscles, causing asphyxia which may be fatal. I had considerable personal experience of tetanus during the Gallipoli campaign and had the opportunity of watching a number of severe cases of tetanus. Seven of my cases were fatal, but in none of them did death happen to be due to respiratory spasm or to asphyxia; what the patient died of was progressive cardiac feebleness, sometimes several days after the tetanic spasms had subsided completely.

Personally, I have never seen a case of *rabies* (or so-called hydrophobia), but the symptoms are described as being of two varieties, sometimes a spasm of the inspiratory muscles, as well as of the pharynx and oesophagus, at other times a paralytic inertia of the whole respiratory apparatus, occurring either primarily or following the spasmodic attacks. The patient may die either from respiratory spasm, or from syncope. On the other hand, *hysterical pseudo-hydrophobia* is not uncommon, and I have seen several instances of this in which the patient erroneously thought that he had been bitten by a rabid dog. Here we observe globus hystericus with rapid breathing and various dramatic movements of the trunk and limbs, sometimes accompanied by a loud hysterical laryngeal noise intended to resemble a dog's bark. But there is neither true respiratory spasm nor paralysis, and to the careful observer the diagnosis presents no difficulties.

There are also other nervous diseases in which the respiratory mechanism may be upset. For example, in a *major epileptic fit* the tonic phase of the fit is often ushered in by a curious laryngeal wail, the so-called epileptic cry, produced by tonic spasm of the expiratory muscles. Throughout the tonic stage of the epileptic fit the respiratory muscles are fixed, respiratory movements cease and the patient becomes increasingly blue and cyanosed. Then, when the clonic stage sets in, the cyanosis passes off, the respiratory muscles take part in the jerking movements and saliva may be jerked from between the lips. I once had the opportunity of doing a laryngoscopy during the clonic stage of an epileptic fit and was able to see the glottis alternately opening and shutting, synchronously with the clonic jerks of the trunk and limbs.

Both in *athetosis* and in *chorea* the irregular involuntary movements may implicate not only the limbs and face but also the respiratory muscles, causing the breathing to be irregular and clumsy, so that the diaphragm and intercostals no longer contract synchronously and the smooth rhythm of respiration is interrupted. In consequence, even the patient's articulation may be jerky. In so-called "paralytic" chorea the superadded factor of muscular feebleness may sometimes be so severe that the patient's voice is reduced to a faint whisper.

The fine muscular tremors of the limbs in *exophthalmic goitre* may sometimes spread to the trunk and to the respiratory muscles. This tremulous respiration, as Minor pointed out, is best marked during a long expiration.

In advanced *paralysis agitans*, if we examine the patient laryngoscopically, we may observe a rhythmic tremor of his vocal cords, synchronous with the tremor of the limbs. This laryngeal tremor usually ceases during phonation, but not always. The patient's voice becomes thin, monotonous, and feeble. His articulation, like his gait, becomes festinant, so that he begins his sentences slowly but tends to hurry towards the ends of sentences or of long words, pronouncing the final syllables hurriedly.

Various respiratory phenomena may be met with in *hysteria*. Of these, hysterical cough is the commonest, but hysterical tachypnoea or rapidity of respiration, hysterical sobbing, also all sorts of curious laryngeal noises, may be met with in different cases. But, whatever their variety, all these hysterical respiratory affections cease spontaneously during sleep. Hysterical cough occurs almost always in bouts or paroxysms, often at the same special time of day, and most frequently when the patient knows herself to be under observation. It may last for hours at a time. Hysterical cough is unaccompanied by true dyspnoea, whilst abnormal physical signs in the respiratory organs are conspicuous by their absence. Hysterical cough often has a peculiar metallic musical sort of noise. Hysterical laughing or sobbing are frequently part of a hysterical paroxysm, whether occurring before, during, or after the hysterical attack. Hysterical tachypnoea is another fairly common manifestation, consisting in paroxysms of extremely rapid breathing (80, 100, or even 150 per minute), but without cyanosis or other respiratory distress. The pulse remains quiet and steady throughout the attack, there are no abnormal physical signs in the chest, and the temperature remains normal throughout. Hysterical aphonia, another common type, is easily recognized, not only by its concurrent phenomena, but by its characteristic laryngoscopic appearances, showing deficiency of adduction of the vocal cords.

Finally, we have the interesting group of *respiratory tics or habit-spasms*, which occur in highly strung, often highly intelligent individuals of psychasthenic nervous constitution. Such patients are not necessarily mentally subnormal; on the contrary, some of them are far above the average of intelligence. Respiratory tics are of many varieties. I recall one individual—a distinguished university professor—whose habit-spasm consists in an occasional sudden sniffing inspiration accompanied by wrinkling up of the nose; another individual—a surgeon of world-wide reputation—who makes an occasional sudden inspiratory laryngeal noise from time to time when talking. In another highly strung young man the breathing is interrupted at irregular intervals by paroxysms of short little expiratory puffs at the rate of about two per second, associated with grimacing and with jerky movements of the arms; another individual gives an occasional little nervous cough or grunt, and so on. Then again, one variety of stammering, in which the patient sticks in the middle of a vowel (less common than the type where he sticks over a consonant) is simply a respiratory tic affecting the muscles of the false vocal cords. Examples of tics or habit-spasms of this sort might easily be multiplied, and many of you can recall for yourselves friends or patients who perform peculiar respiratory actions of this sort. A tic or habit-spasm, it should be remembered, is a psychomotor affair of cortical origin, consisting in the frequent explosive repetition of the same motor act. It never interferes with voluntary movements. Sometimes the tic takes place automatically and without the patient's conscious attention; in more severe cases the tic absorbs the patient's attention during its performance, and is accompanied by a feeling of irresistible compulsion. The greater the psychical abnormality the more violent does the tic tend to be.

An Address
ON
SOME OF THE CAUSES OF OUR C3 POPULATION.*

BY

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WE as a profession had a more or less general acquaintance with the existence and growth of that section of the population which has come to be known as C 3, but it required a great war, necessitating the passing of a limited age group of the manhood of the nation through the sieve of physical and mental fitness, for it to become general knowledge. The examination of recruits was conducted by medical men who, generally it can be said, had no expert knowledge of mental diseases, and consequently the sieve had a very open mesh as far as mental disability was concerned—sufficiently open to allow the passage through of all except the most obvious cases of mental disease, and the rapidity with which the examinations had to be made, owing to the urgent demands of the situation, caused, in many instances, even men suffering from gross forms of insanity and mental defect to be passed into the service. Early in 1917, owing to the large number of soldiers being certified as insane, there was an outcry that the army was creating lunatics, and calling for special treatment of these men as victims of the war. In reply to this I pointed out that down to the end of 1916, estimating from the statistics then available, 5,000 men had been enrolled in the forces in England, Scotland, and Wales alone who, had the war not taken place, would have been certified as insane and placed under treatment as pauper patients. If this estimate had been corrected up to the end of 1919 the figures would have been approximately 10,000.

In this connexion it is most interesting to note the statement made in the House of Commons by the Minister of Pensions that on December 9th, 1920, over two years

* Delivered at the annual meeting of the Kent Branch, held at the London County Mental Hospital, Bexley.

after fighting ceased, the total number of ex-service men confined in asylums suffering from certifiable insanity due (it is alleged) to war service was 5,634. If to this number be added the numbers of those who were certified but who have in the interim been discharged recovered or relieved, and of those who have died, the 10,000 mentioned above will approximately be reached. In other words, 10,000 potentially insane men were drafted into the service, resulting in a standing cost to the nation, if their maintenance, pensions, pensions to their wives and families (all at the full rate of 100 per cent. disability), and the central staff charges are computed, of upwards of three million pounds a year, as against about half a million, their cost as ordinary patients chargeable to a parish. I look upon these as belonging originally to the category C 3, and believe that a very large proportion of them would have been rejected if the sieve had been made of finer mesh by the addition of mental experts to the recruiting boards. All these cases have been a source of anxiety, difficulty, weakness, enormous cost, and trouble to the army authorities, both in the field and also at home. Closely allied to these, and almost inseparable from them, was a very much larger group—the neuro-psychiatric—of cases of war neuroses (commonly known as shell shock), which formed a large proportion of the total number invalided out of the service.

The dictum that man is the product of his heredity *plus* environment is very true, and it depends upon the interreaction of these forces what the dominant characters, physical and mental, of the individual will be. Like produces like, but every breeder of stock will say that by judicious selection in mating, suitable housing, proper feeding, and the cultivation of desired characters, he can obtain, after several generations, a breed of animals whose dominant characters are infinitely superior to his original stock; we, unfortunately, in dealing with the human race, can in our time only influence directly one and, in some rare instances, two generations.

Heredity.

Heredity is without doubt one of the great factors in the production of our C 3 population, and the trend of modern civilization, by its Poor Law system and by its treatment of the unfit during childhood and early adult life, tends to foster the growth of this class. The care, treatment, and education given to the physically and mentally unfit children in the special schools and homes may reduce materially the degree of unfitness, but if their improvement is such as to enable them to escape incarceration under the Mental Deficiency Act, they are turned out mental, moral, and physical weaklings, to return to an environment which was associated with the development of their unfitness. At the best they are misfits, capable only of the most menial work; they are deficient in the power of initiation, of application, and of control; their moral sense is feeble, and they are easy prey to evil influences. Members of this class are, as a rule, very improvident; they marry or cohabit usually with their like at a relatively early age, and, not being restrained by such problems as how the children are to be housed, fed, clothed, educated, and placed in the world, they produce large families to populate our workhouses and homes for the defectives, fill our prisons, and supply the bulk of the patients to our mental hospitals.

The good work which is being done throughout the country by the pre-natal and child welfare clinics sheds a ray of hope over this aspect of the problem, but to what extent the improved environment in the shape of better food, healthier conditions, and early treatment will counteract the bad heredity, time alone will tell.

Alcohol.

Alcohol is another of the great factors, and is commonly inseparably associated with heredity. A great amount of work has been done by numerous investigators to determine the effects of alcohol upon the growth and activity of animal and vegetable cell life, and these investigations all tend to prove the poisonous effects of even dilute solutions of alcohol upon every form of cell life. It appears to interfere in some way with the power of oxidation, resulting in retarded growth and imperfect development if it does not cause death. It is a protoplasmic poison, and as such it attacks the germ plasm in the prospective parents, beginning its evil action even before union has taken place. With regard to its effects on the developing ovum, it has been found in the case of hen's eggs hatched in incubators that when alcohol was applied in the form of vapour or injected as a solution, a large percentage of abnormalities, deformities, and monstrosities were present in the chickens hatched out, and further, that the chickens thus obtained showed a lack of normal instincts. Dogs given alcohol with their food are found to give birth to an unusually large proportion of deformed or dead puppies, and those puppies which survived for a time showed retarded development and the same loss of normal instincts observed in the chickens. These observations would lead one to expect that the human foetus does not escape from these poisonous effects during its sojourn in the womb of the drunken mother—in other words, the prospective mother, addicted to drink, poisons her child before it is born. What possible chance can a child have of developing into a normal citizen when born with such a handicap and surrounded from its birth with an environment of neglect, improper feeding, and the mental and moral miasma of a drunkard's home? Of course if the germ plasm had been handed down through several generations of strong, healthy, and virile ancestors, it is possible that its inherent power of resisting adverse influences might enable it, in a measure, to surmount the obstacles in its present environment, but though it may rise above the physical and mental defects which we associate with imbecility, it will not attain a normal maturity. During the past thirty years my work has necessarily brought me in close touch with the C 3 element of our population, and I am therefore entitled to speak with some authority as to their physical, mental, and moral attributes, even though I cannot at present bring forward statistics to support my views. I have observed that people with an alcoholic heredity are commonly undersized, frequently weedy or malformed; they have poor resistance to any stress, and their recuperative powers are relatively feeble. Mentally their standard of intelligence is poor; they rarely pass beyond the fourth standard at school; they are not willing students, and they show a poor return quantitatively and qualitatively when they do apply themselves; they are emotionally unstable, are easily swayed by passing influences, and are poorly controlled; their realization of their own deficiencies tends to develop the herd instinct, and their noisy valour in a crowd would appear to be great, but individually they are cowards. Their moral sense is commonly poorly developed, and they easily fall a prey to habits antisocial, which land them into the criminal class, and antisomatic, which will probably call for the intervention of the psychiatrist. I believe that the physical, mental, and moral standards of any community are in inverse ratio to its drink bill, and I am convinced that much as many of the U.S.A. citizens may rail against the interference with the right of the citizen which it entails, their present drink policy, if continued, will place them in a very short time intellectually, socially, and economically in advance of the rest of the world.

Diet: Vitamins.

Bad feeding in early life is an important factor in the production of malformations, poor development, and in the laying of a seed-bed for the many diseases and disorders which culminate in chronic ill health, even amongst those who have a good heredity. The deficiency diseases rickets, beri-beri, and scurvy, the underlying causes of a great amount of subsequent unfitness, we now know to be due to the insufficiency or absence from the food of certain definite principles—the antirachitic (fat-soluble A), antineuritic (water-soluble B), and antiscorbutic vitamins. I have for some time held the opinion that a number of other widespread diseases—for example, dysentery, diarrhoea, and even tuberculosis—will ultimately be relegated to this group. Tuberculosis is always associated with fat deficiency, and any improvement in the condition of the patient is invariably accompanied by an increase in the deposit of fat in the tissues. The discovery of vitamins opened the door for unbounded possibilities of improving the health and physique of the nation. I have always been a strong believer in the importance of milk as a sick diet, and long before vitamins were recognized I formed the opinion that when boiled it underwent

some profound change or lost some property which practically destroyed its nutritive value, so that for years I have insisted upon it being taken fresh or with the addition of a little lukewarm water. As during the last three-and-twenty years I have had, among my other duties at this hospital, the important task of supervising the dietary of between 2,000 and 3,000 people daily, I have of necessity given much time to the study of dietetics, and I have made innumerable experiments to aid me in devising nutritious yet economical dietaries. As instancing the value of a few elementary facts in dealing with a restricted dietary, such as the poorer classes have available during normal times, I may point out what happened at the London County Mental Hospital, Bexley, and similar hospitals throughout the kingdom, as a result of rationing during the war. The rationing of foodstuffs had not been long in operation before the health of the patients began to suffer and the death rate began to rise. After much deliberation I came to the conclusion that the primary trouble was the insufficiency of fats containing enough of vitamin A. Accordingly the roasting of meats, as being a process wasteful of fats, was stopped; the boiling of meat was not continued, as a large proportion of people will not take fat in that form; and all the meat was finely minced and converted into soup, with vegetables added and thickened with pea-flour, oatmeal, or maize-flour. The health of the patients rapidly improved; they regained weight, and the death rate dropped to practically normal—on the female side of the hospital it was below the 1913 rate—whilst in other hospitals throughout the country similarly placed and issuing foodstuffs of equal calorific value the patients lost weight and the death rates mounted up to double, and in many instances to treble, the pre-war rate, tuberculosis and dysentery being rampant. Patients transferred here from other hospitals invariably gained weight, in some instances as much as 2 st. in double that number of months. I have given these details not in order to blow our own trumpet, but to emphasize the important fact that a cheap dietary, composed of the cheapest food elements available to the poorest classes, is compatible with good health if properly cooked. The lack of knowledge of the most elementary facts with regard to cooking and the real value of foodstuffs (a form of ignorance not confined to the poorer classes) is deplorable, and a disgrace to the women of this country. Thriftiness is a virtue seldom found amongst our C 3 population, and I have often been struck by the extravagant mode of catering which I have elicited when interrogating patients on their mode of living and dietary. Oatmeal porridge is practically unknown; maize meal, one is told, "is cattle food"; whilst pea-flour is never heard of south of the Tweed. I often wonder as to the true dietetic value of margarine, which is a most important ingredient in the diet, and as to the degree in which it is responsible for the stunted growth which I think is becoming increasingly evident. When first introduced it was composed chiefly of animal fats, which no doubt retained their vitamin content to a greater or less extent during the process of manufacture, and some makers also added a percentage of butter fat, so that its nutritive value was practically equal to butter itself, even though the vitamins might have been considerably reduced during the process, seeing that there is reason to believe, as Professor Halliburton has pointed out, that only a small amount of vitamins suffices. Now, however, it is made from vegetable oils, which are subjected to a very high temperature during conversion, which probably completely destroys the vitamin content, and unless a sufficiency of vitamin is available in the form of milk or fat meat, we have the diet which has been proved by experiment to produce rickets in rats. It is a matter which calls urgently for investigation.

Teeth.

Good sound teeth and healthy gums are rarely found among the poorer classes. There is no country in any part of the world that I have been in where the teeth are so bad as they are in this country. Those who came in contact with the American and Colonial soldiers must have been struck with the great contrast between them and our own in this respect. There is probably no condition, particularly when accompanied by pyorrhoea, which bears in its train so many forms of ill health, such as chronic dyspepsia, chronic toxaemia, neuritis, and valvular heart affections, as bad teeth. Bad feeding and lack of proper care during infancy and childhood is without doubt an important cause, and I often wonder if the form in which bread is eaten in this country does not materially assist in producing this condition; here bread is baked in the form of a loaf, that is to say, with a minimum of crust, whereas on the Continent and also in America it is made in long or small rolls with the maximum of crust. The crumb is the portion which is most appreciated in this country, and rarely is the crust preferred even by the beggar; if any portion of the bread is discarded it is the crust. The teeth are consequently given little or no work to do; the crust, which would strengthen and clean the teeth and harden the gums if eaten, is so small in amount, whilst the crumb forms a pultaceous mass in the mouth which fills the interstices of the teeth and later undergoes acid fermentation. The enamel of the teeth, already of poor quality and possibly deficient in amount owing to rachitic and scorbutic conditions in infancy, is destroyed. Another important point in favour of the maximum amount of crust is that the larger the proportion of the crust the greater the amount of mastication required, with resultant increase in the quantity of saliva and a more advanced state of digestion of the carbohydrates before they reach the stomach, to the great benefit of the whole process of digestion.

Syphilis.

The researches of Wassermann and Noguchi have enabled us to envisage the terrible ravages of syphilis much more completely than was possible before they placed such important aids to diagnosis at our disposal. Syphilis belongs to a totally different category of causes from those already mentioned, seeing that it produces its dire effects independently and uninfluenced by heredity and environment; the soundest heredity and the most ideal environment do not retard or minimize its effects. It also, in the case of acquired syphilis, brings down its victims most frequently in the prime of life when often children have been born, who consequently are thrown dependent on the world and possibly handicapped with the congenital form of the disease. Though it may attack any tissue in the body, it appears to have a selected affinity for, and produces its most disastrous effects upon, the nervous tissue and the vessels in its vicinity. Insanity, chiefly in the form of general paralysis, blindness, and organic nerve lesions, particularly tabes dorsalis, are the principal forms of the disease which reduce the patients to the C3 category. In the congenital form we now recognize it as a great cause of maldevelopment, of wasting, blindness, idiocy, imbecility, or organic nerve diseases, including what is termed congenital general paralyis.

Housing.

Bad housing undoubtedly yields its quota to the C3 population, and bad as its effects are upon the physical health of the inhabitants from overcrowding, insufficient lighting, and insanitary conditions generally, I believe, for reasons which I will presently state, that infinitely greater evils result from its influence upon the moral health, particularly of the children. With the physical aspect of the problem—the lack of oxygen, the excess of CO_2, and the poisonous exhalations of the human body, the presence of sewer gas from faulty drains, dampness, and the absence of sunlight, with their results, poor development, chronic anaemias, catarrhal conditions, tuberculosis, and chronic rheumatism—you are brought in daily contact, and can realize more fully perhaps than I, the extent of their degenerative influence. I wish therefore to emphasize the importance of the moral, or rather the immoral, aspect of overcrowding and its influence upon the mentality of the people as judged from my standpoint as a psychiatrist of over thirty years' experience.

Sexual Excesses.

I want you for a few moments to consider with me the function of reproduction. We know as a biological fact that the function of reproduction is implanted by Nature for the sole purpose of continuing the species, and to ensure that the acts of combining the necessary elements should be performed, Nature further provided that the act should be accompanied by the sense of pleasure; without this insurance animal life would have long since died out. It is only on rare occasions that the sexual act

is engaged in for the purpose of its true function. It is rather looked upon as a well of pleasure which can be drawn upon to an unlimited extent without incurring any penalty. Nature, however, imposes a penalty for the abuses of any of the functions it has created, whether that abuse be positive or negative, and though the range of excessive use and insufficient use may vary in individuals, Nature usually gives warning signs to the individual concerned before imposing the full penalty. You are all acquainted with the nature of the penalties attached to the abuse of most of the body functions, as your daily life is occupied in warning your patients, and in endeavouring to lessen the effects and counteract the penalties they have incurred, but few of you probably realize the nature and extent of the penalty Nature inflicts for abuse of the sex function. I do not propose on this occasion to enunciate any theories as to the pathological states which may ensue as the result of abuse of the organs of generation, but I purpose making an *ex cathedra* statement based upon my clinical experience, and showing how, in my opinion, the depraved morality and pernicious habits so frequently acquired during childhood and early youth, fostered by overcrowding, lead to the mental, moral, and physical deterioration of the race. I am fully convinced from my observations of, and the close investigation of the previous histories of, thousands of cases, that excessive drain on the sexual glands at any age leads to mental deterioration, varying in degree according to the amount of excess, the nature of the feeding, and the hereditary nerve stability in any particular case; and further, that if the drain is set up in early youth, the period when the maximum physical and mental building is taking place, partial, if not complete, arrest of mental development follows. In some rare instances the intelligent and observant parent has recognized the cause of the change, but commonly the child is said to be "outgrowing its strength" or to be "over-studying." A typical history of a very large number of my cases would be as follows: Up to the age of 12 or 13 the child was bright, clever, intelligent, and always held a high position in class, then gradually became dull, found it increasingly difficult to memorize, memory became less reliable and showed curious lacunae; apathy gradually became more pronounced, position in class dropped at each examination, was prone to fits of sullenness and bad temper, formerly unknown, and though at one time prominent in games, tended to become retiring and to be given to seeking solitude. Constipation was a source of much trouble, the complexion became muddy, and it was obvious to the parents that the health was suffering from some cause. The child was given more attention, was kept more closely under observation, was given tonics and special food, and for a time improved, but did not return to the former standard, and the progress at school was slow. After leaving school found difficulty in settling to any kind of work, never stayed in any place long, sometimes left abruptly; was poorly controlled, given to impulsive acts, had been "walking out" for some time, or was approaching marriage, or had been recently married; or perhaps, if the patient was a female, had the first baby, when the complete mental breakdown took place. Close investigation reveals that knowledge of sex matters had been acquired at a very early age, due possibly to observing the conduct and hearing the remarks of a drunken parent or sleeping in the same room with the parents, or, sharing the bed with older children or grown people, had been initiated in masturbation when 10 or 12; possibly had often practised the habit in concert with other children, had been checked, and for a time the habit had been arrested, due to increased attention received, possibly supplemented by religious influence or a change of environment to one of greater social purity; occasional gross lapses had occurred, followed by impulsiveness and irrationality, leading to change of occupation or place of employment; more frequent abuses brought about by the sex excitement associated with "walking out," or the greater excess of normal sexuality of early married life, or that factor, *plus* the stress of childbirth, resulted in the mental attack which we recognize by the term dementia praecox. If the excesses are not commenced until after adolescence has been established—in other words, until after the body building and mental development are completed—then the reduction is not so great, but the balance in the bank of health may have been brought so low that the bills presented by other forms of stress cannot be met. A person of either sex who had become a disciple of Onan commonly indulges in the habit very much more frequently than the normal sexual act would, for obvious reasons, be possible; and I have had quite a large number of cases under my observation where the habit acquired before marriage has been more or less persisted in after marriage. These people, when met by the ordinary trials, worries, and difficulties of life, can offer no resistance, but develop neurasthenia, psychasthenia or melancholia. In the great bulk of cases they recognize the cause of their trouble, and may try to fight against it; some may prevail, but with others the force of habit and the sex impulse is too strong for their weakened will power, and their neurasthenia, psychasthenia, or melancholia become more marked, when they are labelled as suffering from a "nervous breakdown." To this class belong a large proportion of the so-called shell-shock cases. In some fulminating cases, under the influence of sudden stress, real or imaginary, the patient suddenly commits suicide, or we have a double tragedy or some bizarre act bringing the case under public notice, and it is then said to be "a case of temporary insanity."

Bureaucracy.

These are, in my opinion, the principal factors which enter into the causation of our C 3 population. The question at once arises, Are we as a nation, and we of the medical profession in particular, as the real custodian of the health of the people, combating these adverse forces successfully? I fear the answer must be in the negative, for those of us who spend our lives in close contact with one or other section of it must, I think, admit that it is increasing out of proportion to the rest of the community. The enormous growth of bureaucracy in recent years, at enormously increased cost, has not, in my opinion, added to our efficiency in any branch of public health. Every branch of the profession is being pigeon-holed each into its own watertight compartment, presided over by an army of clerks and governed by lay bodies whose chief concern is to see that every man shall do his work in exactly the same way as everybody else. It puts a premium on action, stultifies individuality, kills progress, and writes innumerable reports. Reports are the life blood of bureaucracy. The rapid growth of medical knowledge necessarily means more specialization, as it is utterly impossible for any one man to keep in touch with its increasing ramifications, and therefore, to obtain results in any way commensurate with the increase in medical knowledge, we need greater facilities for team-work, so that special knowledge in any direction may be more readily brought to bear upon any particular problem at the earliest possible time. One of the greatest difficulties in connexion with my own speciality is the long duration of the attack and the progress which the disease has made before it receives the special attention which it requires, with the consequently reduced chances of recovery, and the greater mental scarring should recovery take place. If our special knowledge could only be brought to bear upon the case when the earliest manifestations of the disorder show themselves, enormous benefit might accrue to the patient and to the nation as a whole. I had the great pleasure of being present at the meeting at Dartford when Lord Dawson propounded the scheme formulated by the council over which he presided, with which I found myself in absolute agreement. I believe that the scheme of hospital centres, if efficiently established, would materially assist in solving the problem of our C 3 population.

AT Yale University Dr. Francis G. Blake has been appointed professor of medicine, Dr. Edward Albert Park professor of pediatrics, and Dr. Arthur M. Morse professor of obstetrics and gynaecology.

A SCHOOL for health officers has been established by the American Red Cross in Cracow, and has been very successful there. It grew out of a need for a well-trained Polish personnel to assist in carrying out the child-welfare work of the American Red Cross in Poland. It is stated that the school will probably take a place as part of the educational curriculum of the University of Cracow, and it should have a wide influence in arousing public interest throughout Poland in the numerous health problems of that country.

THE BACTERICIDAL ACTION OF GASTRIC JUICE ON B. TUBERCULOSIS.

BY

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DURING the past few years a good deal of attention has been paid to the subject of gastric analysis in normal people. The invention of the Einhorn[1] tube has made this work much more accurate than was possible with the old stomach tube and glass funnel. It is not necessary, however, to refer in detail here to the valuable observations made by Crohn and Reiss,[2] Rehfuss and Hawk[3] in America, and by Ryle[4] and Bennett[5] in this country, and by numerous other observers, since most of their work has been done with reference to the chemical side of gastric analysis, with which we are only indirectly concerned. The short series of experiments dealt with in this paper was made with a view to testing the bactericidal power of normal gastric secretion on *B. tuberculosis*.

Technique.

The gastric juice was removed from the stomach with the Einhorn tube in the usual way, at regular intervals for a space of three hours after the test meal given on a fasting stomach, in the early morning. In each case the experiments were made upon persons whose digestive system was believed to be normal, and the test meal given was the oatmeal test recommended in Ryle's paper.[4] In the first case every sample of gastric juice removed during the period of observation was tested as to its bactericidal power; in the subsequent cases only three samples were tested, care being taken always to use resting juice as one of the samples.

All inoculations into animals were made by one of us (S. R. G.). As the first experiment showed considerable digestion of the tissues at the site of inoculation, and the guinea-pigs died early as a result of absorption of the toxic products of this, we decided in future experiments to inactivate the gastric secretion by neutralization with N/10 NaOH immediately before inoculation.

This procedure was carried out in Experiments II, III, and IV, and was successful in avoiding digestion at the site of inoculation and the consequent toxic absorption.

CASE I.

Healthy adult male clinically free from tuberculosis. Six cubic centimetres of gastric juice from each sample were mixed with approximately 0.5 c.cm. of typical nummular sputum containing tubercle bacilli (that is, about the amount of sputum a patient might readily swallow) and incubated at 37° C. for one and a half hours. The incubated mixtures of gastric juice and sputum were then inoculated into guinea-pigs. The results obtained are tabulated below.

Sample of Gastric Juice.	Starch.	Mucus.	Bile.	Total Acidity in Terms of N/10 NaOH.	Guinea-pig Inoculation.
15 minutes ...	+	−	−	7.5	T.B. +
30 " ...	+	−	−	21.7	T.B. −
60 " ...	+	+	−	41.7	T.B. +
90 " ...	+	+	−	60	T.B. −
120 " ...	−	+	−	51.7	T.B. +
150 " ...	−	+	−	41.7	T.B. +
180 " ...	−	+	+	54.1	T.B. +

The quantity of resting juice obtained was only sufficient for the inoculation test. It was therefore used as a control in order to be quite sure that the gastric secretion from the case under observation contained no tubercle bacilli. The animal thus injected remained free from tuberculosis.

CASE II.

Healthy adult female clinically free from tuberculosis. In this case three samples of gastric juice were mixed with an emulsion of tubercle bacilli of a known virulent strain. This emulsion, originally containing 2,000 million organisms per cubic centimetre, was diluted down until *theoretically* it only contained 1,000 bacilli per cubic centimetre; 6 c.cm. of gastric juice were mixed with 0.1 c.cm. of this diluted emulsion, so that only 100 bacilli (exposed to the action of gastric juice) were contained in each inoculation of the mixture.

Of course, this can only be regarded as empirical, but we wished to show, if possible, whether the gastric juice could cope with small doses of bacilli. The test was made at 37° C. for an hour and a half as before. The results obtained were as follows:

Sample of Gastric Juice.	Starch.	Mucus.	Bile.	Total Acidity in Terms of N/10 NaOH.	Guinea-pig Inoculation.
Resting ...	−	+	+	40	T.B. −
15 minutes ...	+	+	−	20	
30 " ...	+	+	−	16	T.B. −*
60 " ...	+	+	−	40	
90 " ...	+	+	+	32	T.B. −
120 " ...	−	+	+	28	
150 " ...	−	+	+	14	

* Typical caseous abscess at site of inoculation was noted on the twelfth day after inoculation, but no tubercle bacilli could be found either in direct films or by antiformin method. A control inoculation of the extremely dilute emulsion used in this experiment was also made in a guinea-pig, and proved negative. It seems probable, therefore, that the few tubercle bacilli present in the emulsion were lost during manipulation (for example, on the sides of the pipette).

CASE III.

Adult female convalescent from salpingectomy. No signs of tuberculosis. In order to make the experiments approximate more nearly to natural conditions the samples of gastric juice in this case were mixed with a mouth-wash obtained from a case of pulmonary tuberculosis with bacilli in the sputum. In the case of each sample 2.5 c.cm. gastric secretion was added to 2.5 c.cm. mouth-wash. The time of exposure at 37° C. was the same as in the last experiment (that is, ninety minutes).

Sample of Gastric Juice.	Starch.	Mucus.	Bile.	Total Acidity in Terms of N/10 NaOH.	Guinea pig Inoculation.
Resting ...	−	+	+	8	T.B. +
15 minutes ...	+	+	+	10	
30 " ...	+	+	−	10	
60 " ...	+	+	−	24	T.B. +
90 " ...	+	+	−	22	*
120 " ...	−	+	+	8	T.B. −

* A control inoculation of this sample without the addition of mouth-wash gave rise to no tuberculosis in a guinea-pig.

CASE IV.

Adult male with fracture of right tibia and fibula. No signs of tuberculosis. The routine followed in the last experiment was adopted again, except that (*a*) a different case of pulmonary tuberculosis from which to obtain the mouth-wash was used, the first having died in the interval, (*b*) the time of exposure of gastric secretion to mouth-wash was lengthened from one and a half to three hours. The results obtained were:

Sample of Gastric Juice.	Starch.	Mucus.	Bile.	Total Acidity in Terms of N/10 NaOH.	Guinea-pig Inoculation.
Resting ...	−	+	−	20	T.B. +
15 minutes ...	+	+	−	6	
30 " ...	+	+	−	48	
60 " ...	+	+	−	38	T.B. +
90 " ...	+	+	−	40	*
120 " ...	+	+	−	62	T.B. +
150 " ...	−	+	−	52	

* This sample was inoculated into a guinea-pig as a control of the gastric secretion. No tuberculosis resulted.

CONCLUSIONS.

1. Gastric juice removed from the stomachs of persons free from gastro-intestinal disease, at various intervals of time after an oatmeal test meal, showed very little power of destroying (*a*) tubercle bacilli in sputum which had been exposed to it for ninety minutes, and (*b*) tubercle bacilli in mouth-washes which had been exposed to it for ninety and one hundred and eighty minutes respectively. In one case a total acidity of 62 (Case IV), in another of

54.1 (Case I), and in a third of 24 (Case III) failed to destroy the bacillus.

2. The gastric secretion may possibly have destroyed the tubercle bacilli in a very weak emulsion to which it was exposed under similar conditions, but the number of bacilli used (100) was so small that it cannot be considered a fair test, and even the control test with this weak emulsion proved negative in a guinea-pig.

3. The protection against the tubercle bacillus afforded by the gastric secretion is apparently by no means perfect. But it must be remembered that the dilution of contents and the motor activity of the stomach probably play a large part in this mechanism of protection, and these latter factors cannot be satisfactorily experimented upon *in vitro*.

These results are in general agreement with the conclusions arrived at by Allan Macfadyen[6] under different conditions and with bacteria other than *B. tuberculosis* as long ago as 1887.

4. In the four cases examined the untreated gastric juice contained no tubercle bacilli as judged by the inoculation test. We know of no records which show whether or no tubercle bacilli have been found in gastric juice in persons not suffering from clinical tuberculosis. This point may have important bearing on the portals of entry of the bacillus.

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AN OPERATION FOR INGUINAL HERNIA.*

BY

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SEVERAL cases in quick succession presenting difficulties in the efficient excision of the sac led me to devise a new method by which these and other troubles could be easily and successfully dealt with when they arise.

I approach and reach the back of the inguinal canal from a middle line incision in the lowest part of the abdominal wall. Unless compelled by some complication I do not open the general peritoneal cavity.

All the work is done in a space made in the subperitoneal tissue. I have operated in this way upon forty-one patients. In the first nine I made all the incisions longitudinal. In the remainder I have traversed the abdominal walls by Pfannenstiel's method. I will describe an uncomplicated operation.

The patient is placed in the Trendelenburg position, and the operator stands on the side opposite the hernia. A transverse skin incision 4 or 5 inches long is made 1½ inches above the symphysis pubis. Its centre corresponds with the middle line.

A transverse incision is made in the aponeurosis of the rectus abdominis of both sides, care being taken not to injure either linea semilunaris. The linea alba is undercut upwards and downwards, to within one or two inches of the umbilicus, and to the symphysis respectively: in doing so the sheath of each pyramidalis muscle will be opened. The opening thus made in the aponeurosis is retracted up and down and the subperitoneal tissue exposed by separating the abdominal muscles in the middle line. The peritoneum and its contents are pushed up on both sides, and if necessary kept up by packing.

Two retractors are inserted; they should have long, separate, and blunt prongs. The lower retractor, by far the most important instrument in the operation, should pull the abdominal wall downwards, outwards, and forwards on the side of the operation. Forwards to lift up the abdominal wall. Its prongs should reach the deep epigastric artery and vein. I should not advise anyone to proceed with the operation until he is satisfied that this retractor is in its proper position. The upper retractor pulls the structures outwards. After more completely pushing upwards the outer part of the peritoneum and thoroughly exposing the iliac fascia, the neck of the sac can be seen entering the inguinal canal. The deep epigastric artery and vein are delimited and separated from the inner part of the neck of the sac. Cheyne's dissector is a very useful instrument to use for this purpose. The spermatic veins and vas deferens, with its vessels, are found and separated from the whole length of the exposed sac. These structures are usually on the outer and under surface of the sac.

Having cleared the sac, it is pulled out of the canal by gentle continuous traction in the direction in which it lies. If there are no indications of the possibility of its easy extraction, the sac is cut and the canal portion replaced. The remains of the sac in the subperitoneal space are then radically excised. (Congenital herniae would belong to this type.) The neck of the sac, including part of the parietal peritoneum, is then transfixed and removed. Finally, the inguinal canal of the opposite side is examined, and if abnormalities exist they are treated on the same lines. I have only once had to ligature a vessel in the subperitoneal space, and that was a small branch of the deep epigastric vein.

I will now describe (1) the complications and structures with which I have met, (2) the herniae I would avoid, and (3) the herniae I would select for this operation.

1. *Complications and Structures Encountered.*

I have found and removed unsuspected and potential hernial sacs from the opposite side in three patients. In others I have cleared from the internal opening of the canal of the opposite side firmly attached dimples of the parietal peritoneum. In others I have removed fibrous cords that passed from the parietal peritoneum into the canals.

In one patient the urinary bladder occupied the canal and practically was a part of the neck of the sac. The peritoneum was peeled from the bladder, and the sac was radically excised. When I meet this complication again I should distend the bladder with fluid; this would render the separation of the peritoneum safer and easier. I may say here that it was a sequence of herniae in which the bladder appeared that made me devise some procedure by which I could deal more adequately with this complication. I am sure the operation I have described to you allows a complete and safe method.

In seven cases I found the urachus, which bore the same relation to the sac as that occupied by the bladder. This was traced to its union with the bladder, and it contained a good deal of unstriated muscle, very tortuous patent and small arteries and some fat.

In a few patients I have traced adhesions between bowel and sac, and omentum and sac into the general peritoneal cavity, which I have been compelled to open to satisfactorily clear them away. The herniae in these instances appeared to be reducible before operation.

The obliterated hypogastric artery was recognized in the sac in three cases. In one of these the lumen of the vessel was not obliterated at the point of section.

From one patient I removed a small sac entering the canal, and missed a much larger one that was plastered against the iliac fascia and outer part of the inguinal opening. It was this mistake that makes it so essential to expose the iliac fascia.

In another patient I had the following unfortunate experience. I had removed the sac on the left side and found an unsuspected sac entering the internal opening on the right side. I congratulated myself on removing these two sacs from the same opening. In six weeks the patient returned with a direct hernia on the right side. Rightly or wrongly I associated my operation with this new hernia and determined to take Mr. Victor Bonney's advice and adopt Pfannenstiel's method of traversing the abdominal wall.

As an unusual complication I may mention that through the same opening I have removed an appendix from a patient who suffered from appendicitis and inguinal hernia.

2. *Herniae to be Avoided.*

The herniae I would not select for this operation are direct hernia, irreducible enteroceles, hernia in male children under 7 or 8 years, and old herniae in which the internal opening has been dragged down opposite the external.

3. *Herniae to be Selected.*

I would select herniae in females of any age, and all uncomplicated inguinal herniae in males over 7 or 8. I would not exclude irreducible epiploceles.

* Read before the Section of Surgery, Royal Society of Medicine, December 7th.

Mr. H. L. Martyn of Windsor has performed this operation twice for the relief of strangulated herniae—in the inguinal and femoral regions respectively. Mr. Martyn found access to and division of the strictures easy to perform behind the strangulated intestines. He points out the advantage of being able to deal with a resection of the bowel from the same wound at the same time. He also points out that in femoral hernia the abnormal obturator artery would be seen and ligatured before being cut.

I may here say that I have approached femoral herniae by the same method. It has been quite easy. In some cases I have covered the internal opening of the crural canal by turning up a flap of periosteum from the pubes and by turning outwards and upwards a larger periosteal flap from the back of the symphysis pubis. In other cases I have blocked this opening by coiling up into a plug the internal saphena vein, which I dissected from the thigh as far as the knee.

It is too soon to report upon the success of these measures of occlusion in femoral herniae, but all is well so far.

LOOSE CARTILAGE.

BY

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THOSE clinical conditions of the knee-joint variously referred to as "loose cartilage," "displaced internal cartilage," and "internal derangement of the knee-joint," have in the past been a more prolific source of lay antagonism to the medical profession than almost any other delinquency of the human frame. Indeed, the unqualified bone-setter is the offspring of "loose cartilage" and "surgical apathy." Nor is the layman alone in looking askance at surgical methods of treatment for this condition; we have only to recollect the almost reverential awe in which internal derangement of the knee-joint was held by the R.A.M.C. during the late war. A man suffering from this condition was almost invariably boarded out of the service, partly, no doubt, because of the congested condition of operating theatres and the possibility of infection in certain cases, but far more often because "he would never be of any more use in the army."

The treatment of these wrongs is not easy, and the diagnosis is, to my mind, more difficult still; yet such gloomy pessimism should not exist in the mind of many, nor would it survive if it had not a very real foundation on the rock of fact.

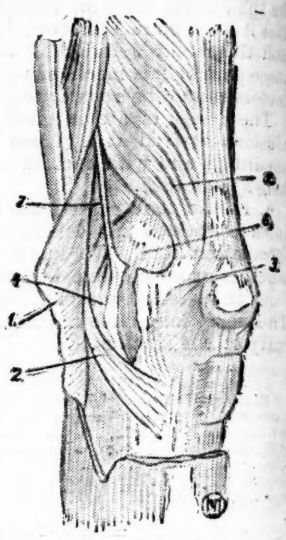
The results of operative treatment for loose cartilage (like all results) are grouped into three large classes: (1) Those cured or much improved; (2) those in whom no change has taken place; (3) those who are definitely worse.

It is with the first class only that I wish to deal here. The cures are in the minority, and in just that type of man which most commonly is the sufferer they are, if not an extremely small moiety, at least nothing like a majority—I refer to the athlete. During the last two years I have made personal inquiries among a large number of patients who have had the internal semilunar cartilage removed. Rugby footballers, cricketers, and soldiers nearly all made the remark, "The knee is better, but of course it will always be weak"; on inquiring this was generally interpreted as meaning "no more football." It may be argued that football should not be the test of a radical cure, yet to my mind the condition is not cured unless the patient can return to his normal mode of life and pleasure.

The clinical condition after operation which prevents the taking of violent exercise is, in nearly every case, an undue laxity of the knee-joint with lateral mobility of the leg on the thigh, and in order to understand how this has been brought about the anatomy and pathology of the condition must be briefly studied.

Anatomy.

The inner aspect of the knee represented in the accompanying drawing of a dissection made by myself in the anatomical department of Cambridge University, shows the various layers which go to make up or strengthen the capsule of this joint. Superficially the fascia lata invests the knee tightly, and when this has been reflected the capsule proper is exposed. This consists of bundles of connective tissue coursing in various directions, and often easily separable into layers and individual structures. Notable is a well-marked crescentic layer of dense fascia derived from the semimembranosus tendon behind and passing across (superficial to) the internal lateral ligament and the fibrous expansion of the insertion of the vastus internus (2). In the drawing it is not as prominent or extensive as I have seen it, and it should have been represented as rising well above the joint line. It is inserted into the subcutaneous surface of the tibia. The fibrous expansion derived from the vastus internus is an integral part of the capsule, and blends with the internal lateral ligament to the medial side. This latter is a ribbon-shaped structure 1 to 1½ in. in breadth, and though its thickest and strongest part passes down from the medial surface of the inner condyle of the femur just below the adductor tubercle, yet it is a much more extensive band of fibrous tissue than is described in textbooks, and extends well forward, where it is in danger of being wounded in the usual incision for removal of the internal cartilage. Furthermore, its intimate attachment to the internal cartilage renders it extremely liable to injury when this is displaced pathologically or removed surgically, the innermost fibres of the internal lateral ligament being torn, or at least stretched, when the internal cartilage parts company from it.



Left Knee. 1, Fascia lata. 2, Slip from semimembranosus. 3, Expansion from vastus internus. 4, Internal lateral ligament. 5, Vastus internus. 6, Internal condyle of femur. 7, Tendon of adductor magnus. (Cambridge Anatomy Dept., 1921.)

Pathology.

The pathology of loose cartilage is of some interest owing to the large number of aliases by which this clinical condition is known. These aliases really hide various stages or types of the same affection.

Practically the term "loose cartilage" refers to a clinical and not a pathological condition. Indeed, it is a most useful term, comparable with that alias for a mild gastritis, a "bilious attack." In practice a true loose cartilage—that is, one detached from all its connexions—must be extremely rare, if, indeed, it ever exists. Broadly speaking, there are pathologically three groups:

1. The unduly mobile cartilage, which after some stress or strain has severed its connexions with the internal lateral ligaments, but remains connected by its anterior or posterior horns and coronary ligaments to the head of the tibia; it tends to become "shunted outwards," resulting in a condition of "knee lock."

2. A partial fracture of the cartilage, which is torn tangentially or transversely to its circumference.

3. A cartilage with one horn detached from its moorings and bent into an abnormal form, or with part of it detached, which may wander about the joint as a loose body.

Be the condition which it may, injury almost always results to the internal lateral ligament—injury which is still further augmented by the consequent synovitis which follows a "knee locking" from the wedging of a detached or semi-detached portion of the semilunar cartilage between the condyle of the femur and the head of the tibia. Repeated or prolonged effusions into the knee-joint will give rise to a laxity of the ligaments and capsule. Those most affected will lie at the point of greatest strain—that is, to the inner side. This is partly by reason of the oblique "set" of the femur on the tibia, and partly because this space between tibia and internal condyle of the femur (normal one-eighth of an inch) will have been forcibly increased by the impaction of a foreign body between them if knee locking has taken place.

Treatment.

The methods of treatment in vogue at the present time consist of removal of the diseased or damaged cartilage combined with careful suturing of the capsule in one layer. As far I know, no attention has been directed towards remedying the lengthened internal lateral ligament, if one may except a caveat uttered against incising it in opening the capsule. This removal, even if it has been performed before the internal ligament has appreciably lengthened after the softening of a synovial effusion, will leave an internal lateral ligament relatively lengthened by one-eighth of an inch, which serves as an excellent starting point for a further actual lengthening, just as an imperfectly removed sac results in a "recurrence" of inguinal hernia, be the sac merely a "dimple" in the peritoneum. In addition, the usual incisions used for removal of the internal semilunar cartilage almost invariably encroach on the anterior fibres of the internal lateral ligament, which is still further damaged thereby. I refer to the curved incision passing to the inner side of the patella and then backwards just below the joint line, or the horizontal one on a level with this internal cartilage. Bearing this in mind, I have during the last two years operated with my eyes turned to the internal lateral ligament as the chief offender in the resultant lack of function of this joint.

Formerly I adopted the horizontal incision, but as this almost invariably resulted in severance of the anterior fibres of the internal lateral ligament, or an insufficient entrance to the joint cavity, I have now returned to the curved incision convex anteriorly.

The skin incision should be large, considerably larger than that which is made through the capsule; this having been found and all bleeding stopped, the internal lateral ligament is defined and thereby protected from damage; if it is so extensive as to reach far forward, its anterior fibres are deliberately divided, and in view of the knowledge of this severance can be united afterwards by separate sutures. The internal semilunar cartilage is then removed in the ordinary way, care being taken not to damage the internal lateral ligament at its attachment to the circumference of the semilunar cartilage, which may need careful division with knife or scissors.

The closing of the wound is the most important part of the operation. The incision through the capsule should be enlarged and the edges of the capsule excised so that at least one-eighth of an inch reduction in its vertical measurement is brought about, the edges are then tightly secured. The internal lateral ligament is shortened in its entirety by two or three mattress sutures, and, finally, the slip of fascia from the semimembranosus is detached from the muscle and swung forwards more vertically to act as an additional stay to the inner side of the joint and attached to the structures to the inner side of the condyle of the femur. If this slip is absent, a strip of fascia lata can be fashioned into an additional superficial internal lateral ligament to assist in the support of the inner aspect of the knee.

The chief points in the operation I wish to emphasize are:

1. The large skin incision, of "flap" form, allowing of the identification of the internal lateral ligament, and, when present, the slip from the semimembranosus.
2. The avoidance of damage to the internal lateral ligament, or the deliberate severance, when it cannot be avoided, of its anterior fibres.
3. The excision of a portion and tightening of the capsule by one row of sutures.
4. The shortening, or even pleating, and, where damaged, the reconstruction, of the internal lateral ligament by a second row of sutures.
5. Lastly, the manufacture of an additional superficial internal lateral ligament.

Passive movements should be begun early, but the leg should not be used to carry the weight of the body for one month, and exercises should be gradually initiated.

As to results, I can only plead that they appear satisfactory. I have only employed this method in some half-dozen cases, and though (as yet) I am quite satisfied with their condition, they have not been as severely tested as I could wish. No vigorous athlete appears among them, and the most strenuous are a railway porter and a policeman, both heavy men, continuously on their feet, and used to a fair amount of sudden turns. The knees are not in any sense lax, and lateral movement of leg on thigh is absent, as in a normal knee.

The most striking result is shown in a man with very lax lateral ligaments who was having repeated attacks of synovitis, and, as he expressed it, need no longer "lead a life in a straight line, but can turn corners with the best." Yet my purpose in publishing this paper is not to presume to teach my surgical superiors but rather to ask for a frank recognition on our part that the condition of loose cartilage has not been blessed by surgical cures in sufficient numbers to warrant a satisfied complacency with the present methods of treatment, and the possibility (it is almost a probability) that treatment of the cartilage itself is not the only procedure necessary for the repair of a damaged joint.

Lastly, I trust that others with more surgical experience of these cases than myself may come forward with criticism or condemnation of the methods advocated above.

THE MODERN DIETETIC TREATMENT OF DIABETES MELLITUS.*

BY

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SENIOR HONORARY VISITING PHYSICIAN, JOHANNESBURG HOSPITAL.

AT the close of the eighteenth century John Rollo discovered that abstention from starch and sugar benefited the symptoms of diabetes. For more than a hundred years this epoch-making discovery dominated the treatment of the disease. From the middle of the nineteenth century onwards physicians, however, began to realize that glycosuria did not always disappear on a purely animal diet and to recognize the danger of the supervention of acidosis and coma on such a dietary. Towards the close of the century it was discovered that sugar could be derived from protein as well as carbohydrate and that the fats played a vital rôle in diabetes. During the first decade of the present century various observers, such as Naunyn, von Noorden, and Guelpa, recognizing the advantage to diabetics of occasional abstention from protein and fat as well as the starches, instituted periodic fast or semi-fast days. The adoption of these methods met with considerable success, but glycosuria commonly recurred when the former diet was resumed; this was especially the case when, as was customary, the patient afterwards was fed the more generously in the hope of making good the loss of tissue incurred during the period of restricted diet. The main object of treatment was to maintain the patient at the highest possible level of weight and nutrition with the intention of assisting him to withstand a wasting disease. As the result of Allen's experimental work at the Rockefeller Institute, the very opposite object is now kept in view, for we have learnt that the permanent reduction of bodily nutrition is in itself beneficial to the diabetic state.

Minkowski and von Mering in 1889 had shown that complete extirpation of the pancreas in animals caused permanent diabetes; and in 1900 Opie and others demonstrated the association between degeneration of the islands of Langerhans and the existence of glycosuria. Allen based his researches on the assumption that these islands furnished an internal secretion which supplies substances required by the body cells in the metabolism of carbohydrates. In 1913 he reported the results of his attempts to secure a "working model" of the disease by experiments on partially depancreatized dogs. Virtually every detail of clinical diabetes could be reproduced by removing varying proportions of the pancreas in animals, mild or severe diabetes being secured at will. The animals were then rendered sugar-free by fasting; in other words, by affording physiological rest to the external pancreatic secretions associated with the grosser digestive processes, the flow of the more specific internal secretion of the gland was augmented.

These experiments showed not alone why fasting was advantageous, but indicated practical methods for preventing the return of glycosuria when fasting was completed. Diabetic animals which from the outset were kept

* A paper read before the seventeenth South African Medical Congress at Capetown, October, 1921.

on restricted diet remained thin, but were vigorous and lively and continued sugar-free. Others, allowed to eat what they chose, appeared at first much better nourished, but sugar returned and they grew emaciated, cachectic, and finally died. The secret of success lay in keeping the diabetic animal permanently under-nourished and thereby adjusting the total load of the food intake to the lowered capacity of the pancreatic endocrine secretion. Correctly treated animals not alone continued sugar-free, but their tolerance to carbohydrates actually improved; weakened function was restored and strengthened by judicious feeding.

In 1914 Allen[1] applied the results of his experimental work to the treatment of the disease in man. At about the same time Graham, in London, discovered independently by clinical observation the value of fasting, followed by underfeeding. The principles of his method closely correspond to those of Allen, although they differ in details of application. The work of these observers has placed the whole problem of the dietetic treatment of diabetes upon a scientific basis, and affords one of the most notable advances of recent years in the field of medical therapeutics.

General Principles of Treatment.

The object of the modern treatment is twofold: First, to render the patient as quickly as possible sugar-free without producing acidosis or increasing an already existing acidosis. Second, to keep him free by means of a diet adjusted to his lowered assimilative capacity and designed to strengthen that capacity.

1. *Method of Rendering the Patient Free of Sugar and Acidosis.*

Freedom from both glycosuria and acidosis is usually readily achieved by fasting. Since diabetes is a disorder of total metabolism extending to protein and fat as well as carbohydrate, it is necessary—save in the mildest cases, when the restriction of carbohydrate alone may suffice—to withdraw all food materials. By cutting off the entire food intake, as in starvation, the risk of precipitating coma is avoided. On fasting, the main source of sugar is removed by prohibiting the ingestion of pre-formed carbohydrate; the body is consequently made to utilize its own store of sugar, so that, as Poulton[2] points out, there is soon none left to pass out into the urine. The same applies to protein (potential carbohydrate), although the process here takes a longer time to accomplish. Finally, when the tissues have been caused to burn their own sugar, the fat stored in the body is completely oxidized without the formation of acetone bodies as toxic by-products. Acidosis consequently disappears, as a rule, along with glycosuria during fasting.

2. *Method of Building up a Suitable Diet.*

The aim after fasting is successfully completed is to build up a diet which will keep the patient free and at the same time provide sufficient energy for the maintenance of health. This object, which is sometimes immensely difficult of accomplishment, can be reached by different methods.

When the new treatment was first introduced it was believed necessary to investigate separately the patient's tolerance for the individual food elements—first for carbohydrates, next for protein, and lastly for fat. This took a great deal of time and entailed, during the estimation of the carbohydrate tolerance, a relative protein deprivation detrimental to health. Clinicians, in their anxiety to avoid former evils attendant upon a high animal diet, went to the opposite extreme with diets excessive in vegetables and deficient in protein and fat.

Allen[3] now recommends in most cases a diet composed from the outset of almost pure protein. Mosenthal[4] had previously outlined diets predominant in protein, and Fenlon[5] quite recently has advocated a similar method. Graham[6] employs the "ladder diet," in which carbohydrate is maintained at a low level, whilst protein and fat are fixed from the outset at a relatively high level and gradually increased; carbohydrate is added in at the end. This system has many adherents; it is easy of application and yields brilliant results, especially in those milder cases tolerating high protein-fat allowances and reacting badly only to carbohydrates. Quite recently Graham[19] has instituted modifications of his method which would appear to promise even greater success in their clinical application.

In my own experience, based upon the treatment of 30 cases of diabetes, the best results on the whole have been obtained along the lines of the arrangement of diet outlined in Allen's earlier papers[1] and standardized by Joslin in America and by Leyton and Cammidge in England. Broadly, the primary purpose of this system is to learn the tolerance for carbohydrate and cover the protein loss as quickly as possible; fat, usually less urgently needed, is added later as conditions may seem to indicate. The method may be regarded as a compromise between the earliest schemes, involving extended periods of vegetable diet, and the newer plans, entailing possible risks from the stimulating effect upon metabolism of an initially high protein intake. It is simple of accomplishment, and possesses the merit of being applicable alike to mild and severe cases.

Whatever method may be selected, the keynote of treatment is under-nutrition. As Allen[7] has pointed out, the fact must never be lost sight of that any kind of food in excess weakens tolerance for other foods. Consequently the diet must be adjusted carefully with reference to all its constituent elements. Strict adherence to the scheme adopted is essential, for the patient who undertakes treatment and then relaxes his diet is in a worse plight than if he had never been treated.

Application of Modern Methods.

The individualization of the patient is of the highest importance. No two cases of diabetes are alike, and although a basic plan of treatment is essential each case must be managed according to its type of severity. When a diabetic presents himself for treatment the primary step is the careful examination of the patient. The history of his illness, the condition of his organs, and his weight are ascertained. In the scientific study of the metabolic disturbances of the disease diabetes, elaborate methods are required for the investigation of the state of the blood fat, the nitrogen and ammonia content of the urine, the percentage of CO_2 of the alveolar air, etc. In clinical practice, as Joslin[8] has insisted, complicated analyses are not necessary, and it is ordinarily sufficient to examine the urine for the presence of glucose* and diacetic acid. Estimation of the blood sugar is essential and must not be neglected unless laboratory facilities are wholly unavailable.

The required data having been elicited, the patient is advised to enter, if possible, a hospital or nursing home whose staff are familiar with modern dietetic methods and trained in the accurate weighing and measuring of foods.

The patient first of all is made to fast. Allen[9] has shown by experimental observations in animals that light exercise is useful in mild diabetes, whereas it increases the blood and urinary sugar in severe cases. Consequently the patient is allowed to be up and about during the fasting period if his general condition is good, whilst the weak and emaciated diabetic with much acidosis is kept in bed. It is wise, as emphasized by Joslin,[10] not to withdraw all food abruptly. In order to anticipate possible danger from acidosis, a modified diet, with fat excluded, is first of all employed. In severe cases with a strong diacetic acid reaction protein may next be withdrawn for forty-eight hours and carbohydrate food finally eliminated. As a rule, however, it is sufficient to place the patient for forty-eight hours on a mixed diet rendered fat-poor by the exclusion of butter, cream, meat-fat, etc.

The actual fast then follows, mitigated by the administration of tea or coffee (without milk, sweetened by saccharin if necessary), water and soda-water as desired, and a quantity of clear soup (beef-tea, bovril, etc., skimmed of fat) not exceeding 10 to 20 ounces per diem. Actual hunger is allayed by the use of substances such as biscuits made of agar or bran, which are practically devoid of nutritive contents. Alcohol to the amount of from 1 to 2 ounces daily may be allowed during the period of meagre diet, although its use is not approved by all authorities.

* As Graham[19] points out, in using Fehling's test equal quantities of urine and mixed solution should be boiled separately, mixed when boiling, and not reheated.

Fasting is continued until the urine is sugar-free, and for at least twenty-four hours afterwards. The duration of the fast should be determined, where possible, not alone by examination of the urine, but by the measure of the sugar content of the blood. Hyperglycaemia frequently persists after the urine is free. Tests based on glycosuria alone, as Allen[3] has shown, may yield a false standard subject to considerable error on account of the wide variations of renal permeability. For this reason the fast is extended to a period of not less than twenty-four hours after the urine is free, when the blood sugar as well may be hoped to have reached the normal. Leyton[20] states that the disease is not arrested unless the diet is reduced until the blood sugar is normal.

The disappearance of sugar indicates that the overtaxed internal secretions of the pancreas have been sufficiently restored by alimentary rest to permit the complete assimilation of sugar formed from the body tissues. It is expected that later, by judicious exercise, these functions will further become strengthened and able in addition to utilize the sugar contents of a carefully adjusted diet.

A mild case will become free in twenty-four hours; in severe cases the process may occupy many days. Allen[11] originally employed continuous fasts, extending in some cases to as long as ten days. Joslin[12] shortly afterwards substituted the more universal method of intermittent fasts, restricted to three or four consecutive days, interrupted by a few days of low carbohydrate-protein diet, and repeated if necessary. This alternate process of limited fasting with interpolated food days may require several repetitions before freedom from sugar is produced. Attainment of the aglycosuric state is accompanied by prompt cessation of the more distressing symptoms of diabetes, such as thirst, dryness of the mouth, polyuria, excess of appetite, pruritus.

Usually the diacetic reaction disappears together with the sugar. Some moderate diabetics exhibit slight persistence of this reaction so long as they are starved. This may be disregarded, for it will usually cease when feeding with carbohydrates is begun and nutrition reaches a certain level. Once the patient is free there follows the infinitely more difficult task of arranging his subsequent diet. The first step is to introduce carbohydrates, which even the severest diabetic retains some power to burn. This is best done by allowing a limited quantity of green vegetables, such as French beans, spinach, lettuce, or other "greens" (see Table B, Group 1). These are poor in nutritive value; when cooked three times in different waters they contain less than 2 per cent. of carbohydrate. At the same time they are rich in cellulose, which furnishes a comfortable feeling of fullness and stimulates intestinal peristalsis.

The first addition to the diet, then, is made in the form of from 5 to 10 or 15 oz. of thrice-cooked greens, each ounce of which represents approximately one gram* of carbohydrate. This ration is increased by 5 to 10 grams daily until sugar appears. In order to avoid the risk of sudden flooding of the tissues it is necessary to divide the food and distribute it in three or four portions during the day (for instance, at breakfast, lunch, tea, and dinner). Occasionally glycosuria will recur immediately vegetables are introduced; this phenomenon, which probably is the result of unpreparedness of the tissues for a carbohydrate influx, need not be viewed with alarm, since it ceases as a rule on increasing the quantity of this food. A very few diabetics, according to Joslin,[12] reach a daily tolerance level of between 200 and 300 grams of carbohydrate; most have a tolerance below 100 grams; the majority below 50 grams. In severe cases the attainment of a tolerance of between 40 and 50 grams may be considered satisfactory, provided a sufficient tolerance for protein and calories is at the same time achieved.

On the third day, whilst the carbohydrate tolerance is still being tested, about 20 grams of protein are added to the dietary. Three eggs will furnish this quantity. A further daily addition of 10 to 20 grams is made in the form of other predominantly protein foods, such as white of egg, lean meat, fish, etc. The increase is maintained until the patient receives from 1 to 1½ grams of protein per kilogram† of his body weight. Thus a patient weighing 110 lb., or 50 kilos, would be allowed some 50 to 70 grams of protein daily, provided he remains sugar-free. Some severe diabetics are unable to tolerate so high a level of protein, and will develop sugar on an excess of this food material as surely as on an excess of carbohydrates. The adjustment of the protein allowance consequently must be carefully made.

A small amount of fat has of necessity been included in the food during the process of building up the protein allowance, but until a relatively high carbohydrate ration is reached this element is restricted in order to minimize any tendency to the production of acetone bodies. When, however, the protein limit has been approached a sufficient carbohydrate standard reached, and the blood sugar is normal, fat as such is introduced into the diet. It is convenient to commence with an ounce of thin cream (containing 6 grams of fat). Thereafter from 10 to 20 grams of fat are added daily in the form of butter (containing some 25 grams to the ounce) and other predominantly fatty foods. Daily additions are made either until the body weight becomes stationary, or until the total caloric value of the diet reaches a level of about 25 calories* per kilogram of body weight—provided that sugar does not recur and there is no increase in acidosis. Cammidge[13] recommends that the final proportion of fat to carbohydrate in the diet shall not exceed a ratio of two grams to one.

An excess of total calories is the commonest mistake of inexperience, and is responsible, as Allen[3] states, for much unfavourable progress and mortality in diabetes. The patient, who has grown thin during treatment, is generally anxious to put on flesh by increasing his fat intake. This desire must be curbed lest any good results hitherto achieved should be completely nullified. As Geylin[14] points out, apart from immediate ill effects such as the possible precipitation of acidosis, fat exerts a depressing effect on carbohydrate metabolism and prevents a high degree of tolerance being maintained. These effects are the more dangerous in that they may be delayed and insidious in onset. Many a patient who up to this point has reacted well will relapse if he is permitted an excess of fat. Allen[15] has shown experimentally that the assimilative powers of diabetic animals rise and fall inversely with a gain or loss of weight dependent upon fat ingestion. In some manner an increased fat supply or formation of adipose tissue imposes a burden on the functional capacity of the islands of Langerhans.

It follows that although sufficient fat should be allowed to prevent further loss of weight, or even to permit of a gain of a few ounces per week, any material increase in weight which recalls sugar or acidosis must be checked by fasting. The patient must be schooled to accept the spareness of permanent under-nutrition as a substitute for the emaciation of disease. In most cases he will ultimately tolerate a greatly increased carbohydrate intake if his fat is kept low.

Throughout the treatment a twenty-four hours' specimen of urine is examined daily, and the return of the slightest trace of sugar is a signal for fasting. Usually a single fast-day will suffice to clear up the sugar. The diet thereupon should comprise not more than 50 per cent. of the food contents consumed just prior to the relapse. Further additions are cautiously made, and the maximum intake restricted for weeks to a level of from 10 to 20 per cent. lower than that previously reached.

During the course of treatment, and after its completion, the patient is subjected to a restricted diet on one day in each week. He is required to fast on every seventh day if his condition is severe, or merely to reduce his food to half-rations if the case is a mild one.

It is clear that the details of treatment must vary in accordance with the type of disease. Great difficulties are experienced in the treatment of the extremely emaciated and cachectic patient. It may be necessary, as Allen[1] expresses it, in such cases to juggle carefully the various factors of glycosuria, acidosis, and bodily maintenance. In some a prolonged period of almost pure protein nutrition may be required before the pancreatic function is sufficiently restored to permit the assimilation of even so small a quantity of carbohydrate as 10 or 15 grams without the return of glycosuria. In others, the supply of

* 30 grams = 1 oz.
† 1 kilogram = 2.2 lb.

*A calorie = the amount of heat required to raise the temperature of 1 kilo of water 1° C.
1 gram carbohydrate = 4.1; 1 gram fat = 9.3; 1 gram protein = 4.1 calories.
In practice it is convenient to ignore the decimal places.

pancreatic hormone may be inadequate to dispose of the minimum supply of food materials—namely, those derived from the patient's own body stores; glycosuria under these circumstances is beyond control. Again, in the severest forms of diabetes the patient may be unable to tolerate sufficient fat in his diet to subserve the needs of a comfortable existence, whatever the proportion of other food materials tolerated. In such cases although, as Janney[16] points out, the only danger-free existence for a diabetic is a sugar-free existence, the persistence of a moderate degree of glycosuria is preferable to a condition of chronic starvation.

Fortunately a course of dieting, conducted broadly on the lines described, in the great majority of instances will achieve brilliant results in a few weeks. As Joslin[21] says, there are now few cases of diabetes for whom little hope remains. The earlier in the disease treatment is begun the better will be the results. In many cases of young diabetics formerly pronounced hopeless, with an expectation of only a year or two of life, the patient after treatment is able to resume his ordinary routine of existence with an increased tolerance for starchy foods. His symptoms are relieved; he regains energy, resistance, and a sense of hopefulness and well-being. His life is prolonged, and risks from the common diabetic complications of gangrene and coma are greatly diminished. He is provided with a dietary offering a wide range of variety which robs it of monotony. His food intake, it is true, is restricted as to quantity; but it is known that the diabetic can lead an active life, maintaining his weight, on much less food than a healthy person of the same weight.

An important factor in treatment is the education of the patient in the rationale of the methods employed. His intelligent co-operation is essential at all stages. As Leyton[17] says, the patient below a certain standard of intelligence and possessing no self-control cannot be treated. The intelligent patient is readily taught to examine his own urine and to fast if sugar recurs at any time. He is instructed in the elementary principles of dietetics and the significance of food values. He is shown how his rations are weighed and measured and learns to estimate with sufficient accuracy his food portions, so that he is able after a time to dispense with weighing scales. He is given a limit which he must not exceed with regard to the various food elements. This limit, in order to provide a margin of safety, is placed at some 10 to 20 per cent. below the actual level he has been found capable of tolerating. Lists are supplied to him (see Tables A and B) showing the food value of the commoner articles of diet and their interchangeability. From these he is taught to select his menus within the limits prescribed. Finally, he is told not to gain weight but to follow a dietary just sufficient to cover his body needs as indicated by the weighing machine.

Prognosis.

Under former systems of dieting none but the mildest cases were rendered sugar-free for more than very brief periods. Even moderately severe diabetics, in spite of the most rigorous carbohydrate restrictions, remained glycosuric and subject to constant danger from gangrene or coma. The immediate outcome of modern methods is the arresting of the progress of the disease with consequent prolongation of life, whilst the risk of disastrous complications is enormously lessened. Acute diabetes has been largely abolished.

Of ultimate results it is too early to speak with certainty, for the method is yet in its infancy. When the new treatment was first introduced it was hoped that if the patient could be kept sugar-free for a prolonged period tolerance would gradually improve and approximate the normal. In mild diabetes this expectation appears to be justified in the case of experimental animals; in the case of the human diabetic the point is still undecided, and many years of observation will be needed before it can be settled. So far as the severer type of human diabetes is concerned, sufficient data are available already to show that the immediately favourable results are not always permanent. In some grave cases, in spite of most careful dieting and the avoidance of overstrain from an excessive food intake, the disorder is clearly of an inherently progressive character and spontaneously advancing. Even in mild cases which have remained well for years under treatment, the supervention of intercurrent conditions such as septic infections, influenza, pyorrhoea, or even trivial ailments and emotional disturbances, may produce metabolic set-backs of a grave and permanent character not amenable to further fasting and suitable dieting.

The modern dietetic treatment of diabetes is not a cure in the true sense, since it represents the sparing rather than the restoration of a weakened function. As Allen[18] says, "Any positive means of augmenting the endocrine pancreatic function even by a little would give therapeutic results far surpassing those of the negative plan of sparing the function by diet." Some day we may hope to be able to stimulate or strengthen the pancreatic function in a direct manner, and so to supersede palliative measures by actual cure.

TABLE A.: GENERAL.

	Carbohydrates. Grams.	Fat. Grams.	Protein. Grams.	Calories.
1 oz. "greens"	1	—	0.3	6
1 oz. oatmeal (cooked) ...	3	0.5	1	20
1 oz. milk	1.5	1	1	20
1 oz. thin cream	1	6	1	60
1 oz. butter	—	25	—	225
1 oz. fat	—	30	—	270
1 oz. bacon (average) ...	—	15	5	155
1 oz. meat (lean)	—	3	8	60
1 oz. ham (cooked)	—	7	6	90
1 oz. fish	—	—	6	25
1 oz. sardines (tinned) ...	—	6	7	80
1 oz. broth (clear)	—	—	0.7	3
1 oz. bread (white)	15	0.5	2	70
1 egg (hen's)	—	5	6	70
1 oz. white of egg	—	—	4	16
1 oz. calf's foot jelly ...	5	—	1	25
1 oz. Dutch cheese	1	5	11	95
1 oz. Cheddar cheese ...	1	13	9	160
1 oz. almonds	5	16	6	200
1 oz. walnuts (dry)	3	25	6	260
1 oz. alcohol	—	—	—	200

TABLE B: VEGETABLES AND FRUIT.

GROUP I.—*Containing average 1 gram carbohydrate per ounce:* French beans; spinach; asparagus; seakale; brussels sprouts; cabbage; cauliflower; vegetable marrow; pumpkin; lettuce; cucumber; celery; watercress (cooked) tomatoes;* rhubarb.

GROUP II.—*Containing average 3 grams carbohydrate per ounce:* Onions;* turnips;* carrots;* artichokes; leeks; radishes; watercress (raw); beetroot;* mushrooms;* lemons; strawberries; water-melon; peaches; oranges; pineapple.

GROUP III.—*Containing average 5 grams carbohydrate per ounce:* Green peas; broad beans; macaroni; apricots; pears; apples;* nectarines; cherries.*

GROUP IV.—*Containing average 7 grams carbohydrate per ounce:* Boiled potatoes; haricot beans; rice; fresh figs; bananas; plums; grapes.

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* Show wide seasonable variations in carbohydrate content.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CONSERVATIVE TREATMENT OF COMPOUND FRACTURE OF THE ANKLE.

OF the many lessons useful to civil surgery taught by the war those concerning amputation have a most practical bearing on everyday life. The most ingenious devices of the instrument-maker, aided by the most painstaking co-operation of the patient, yield but a poor result when compared with a living limb. Whenever possible, therefore, conservative methods should be adopted. Sepsis and shock rendered this impossible in the great majority of war cases—a fact appreciated after an initial failure of attempted conservation. In civil life these two factors enter into the prognosis to a minor degree.

My apology for the following detailed account of a somewhat commonplace case is the desire to emphasize the value of conservative measures.

History.—Mrs. F., aged 31, was admitted to the Royal Portsmouth Hospital on April 15th suffering from a compound Pott's fracture dislocation of the right foot. The injury resulted from a fall down a flight of stairs on the previous evening. Her medical attendant had immediately, under an anaesthetic, ligatured bleeding points and dressed and splinted the limb. His opinion and that of his colleague was that amputation was imperative.

Preparation.—Two hours was given for the patient to overcome the effects of a long ambulance journey. Then under general anaesthesia the skin was cleaned successively with turpentine, methylated spirits and ether, and finally painted with 2 per cent. iodine. Inspection revealed the injury as a clean "split" of the skin from the outer border of the tendo Achillis posteriorly to the neck of the astragalus anteriorly, at the level of the malleolus on the inner aspect of the foot. The deltoid ligament was ruptured together with the tendon sheaths; the tendons were displaced. The internal malleolus was fractured 1 in. above its tip. The lower quarter of the fibula was shattered. The whole foot hung hinged on the outer skin flap and tendons so that when everted the lower end of the tibia projected from the wound. The posterior tibial artery was uninjured.

Operation.—The joint was irrigated with mercury perchloride 1 in 3,000, the edges of the wound excised, and fragments of fibula removed as far possible. The foot was inverted, the tibial fragments opposed, and retained by a triradiate plate placed as an upright Y. The joint was irrigated with hydrogen peroxide and finally with saline. Interrupted catgut sutures were used to close the joint cavity as completely as possible. The tendons were sutured in position. The skin was closed without drainage.

After-Treatment.—A posterior angular back splint was applied. The wound was dressed on the fourth day. There was a slight breaking down of the wound immediately over the plate with some sero-purulent discharge; 1 per cent. picric acid dressings were used, and the temperature never rose above 99.8°. Passive movements were carried out from the fourth day, and active movements encouraged from the tenth day. On June 6th movements through twenty-five degrees were possible; the plate was still quite fixed, but healing over it was slow. I removed the plate. Progress was now rapid. A small sinus opened on the outer side of the foot and some fibular sequestra were discharged. The patient was discharged on July 2nd and attended as an out-patient. At the present time the foot is quite healed and movements are excellent. The last *x*-ray examination showed no further fibular sequestra.

In this case amputation was expected. I held a faint hope that an ankylosed joint might be attained, and then the result—a mobile joint with no shortening. The success I attribute to very careful skin preparation, antiseptic joint irrigation, and strict aseptic dressing during the tedious and prolonged after-treatment.

I am indebted to Mr. C. P. Childe for permission to publish this case.

London. R. STAFFORD FOSS, M.B., B.S., M.R.C.S.

EMETINE IN JAPANESE BILHARZIA DISEASE.

THE Japanese medical officer in charge of ss. *Panama kawu*, which was visiting Durban on October 1st, 1921, informed me that he had had three patients suffering from the effects of *Schistosoma japonicum* infestation on board, and that he had successfully treated them with emetine injections, giving from a half to one and a half grains on alternate days over a period of about one month. This is confirmatory evidence of the value of emetine injections in schistosome infestation, and I have already observed the degenerative changes characteristic of the antimony treatment in ova obtained from the urine of patients in Natal who harboured three distinct species of schistosome. However, I think a word of warning is needed in regard to the severe cardiac depression which is likely to occur during the second or third week of the emetine treatment, especially if emetine is tried, as it deserves to be tried, in comparison with the antimony treatment for lepers.

Durban. F. G. CAWSTON, M.D.Cantab.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

METROPOLITAN COUNTIES BRANCH: CITY DIVISION.

AT a meeting of the City Division of the Metropolitan Counties Branch, held on November 18th, Mr. A. W. SHEEN, Professor of Clinical Surgery in the University of Wales, delivered a lecture on "Visceral displacements as a cause of disease."

The lecturer said that he would endeavour to make the subject interesting to the general practitioner, and would deal with it particularly as indicating lines of research available to him. He pointed out that the investigation of every new patient was a piece of original research, and indicated the sharp difference of opinion which existed as regards the importance of visceral displacements as a disease-producing factor, referring particularly to the work of Sir Arbuthnot Lane and to a recent paper by Lord Dawson. The possible causes of visceral displacements and their relation to disease were dealt with seriatim under the headings of developmental abnormalities, body shape, gravity, Lane's hypothesis, infections, and—as lesser factors—bad food, bad habits, bad hygiene, and neuropathic conditions. Details were given of the opposite view that displacement might exist without disease and disease without displacement, and this portion of the subject ended with an expression of the belief that congenital abnormalities *plus* gravity *plus* infection were the most important factors in disease production, others being secondary. A description was next given of the disease due to visceral displacement, which the lecturer considered could be recognized as a definite clinical entity, a condition of "indigestion" with malnutrition, having local abdominal symptoms and signs of general toxaemia. Toxaemia was the lot of all, a sterile alimentary tract becoming infected at birth; henceforth life was maintained by a precarious balance of toxins and antitoxins, and a sterile bowel might go far towards conferring immortality. The *x*-ray findings after opaque meals were described and the results of "biopsies" at operations given.

Treatment, non-operative and operative, was next considered: under the former heading aperients and a supporting belt were approved; under the latter fixation operations directed particularly to the large bowel. Non-operative measures were advocated in older people. The lecturer related his personal experience, especially in reference to a number of pensioner patients whose large bowels he had fixed by the methods of Waugh and Coffey. These patients had been idle for years, and in and out of various hospitals; many had had other operations. Of a considerable number particulars had now been obtained, and all but one of these patients were working. He also mentioned a few cases of colectomy which he had performed, and, although the results were good, he did not advocate the operation, pointing out that after colectomy there were cases which neither died nor recovered, but became subject to irremediable abdominal misery. The utility of the large bowel was shown, *inter alia*, by the biological researches of Colin Mackenzie. *X*-ray observations of opaque meals given to twelve old men were described. These were healthy labouring men working at the time, their ages varying from 68 to 80, the average being 75. In not one was the colon grossly displaced. Methods of observation similar to this were indicated and advocated. The disease was not peculiar to people in whom bad food, bad habits, bad hygiene, and nerve abnormalities might be supposed to have set up neuro-muscular defects in the bowel. It occurred in all sorts of people, although different classes reacted differently.

Appendicitis was a separate disease. Pyorrhoea was a primary infection. The incidence of tuberculosis depended

more on the degree of acquired immunity of the individual than upon alimentary toxaemia. Gastric and duodenal ulcers, troubles in the biliary tracts, and mobile right kidney were usually secondary effects of visceral displacements. In conclusion, Mr. Sheen spoke of research, stating that the disease was within the every-day experience of practitioners, and that their investigations thereon were as worthy of financial aid as laboratory research. He indicated the various lines on which such investigations might proceed.

Reports of Societies.

THE ORIGIN OF THE ANGINAL SYNDROME.

A DISCUSSION took place at the Harveian Society on December 8th, with Dr. G. DE BEC TURTLE in the chair, on the question, "Is the anginal syndrome of cardiac origin only?"

Sir CHARLTON BRISCOE put forward the thesis that angina might be due to respiratory stress. After drawing attention to the clear-cut nature of the picture in angina and the large number of cases which lay between the true angina and the so-called "false" angina type, he proceeded to develop the following propositions:

1. That the causes of an attack of angina were such as to place a strain upon the respiratory apparatus just as much as upon the circulatory.
2. That no adequate explanation was forthcoming for nocturnal attacks on the theory that the condition arose from circulatory stress.
3. That such attacks were more consistent with a theory of respiratory origin.

When over-fatigued, the skeletal muscle gave rise to referred pains, and this was true of the muscles acting on the upper respiratory apparatus. The triangularis sterni when tender and tested by pressure referred the pains through to the back of the sternum or outwards to the axilla, according as the stress fell during expiration or inspiration. The scalenes and intercostals of the first five spaces referred the pains to the arm, shoulder, or anterior axillary region, and less frequently to the occipital region, anterior triangle, or sternal area. The composite referred areas of any of these muscles presented a picture which would satisfy the referred areas found in typical cases of angina pectoris. The anterior scalene—under ordinary circumstances the most constant muscle in inspiration—was the most prolific in referred pains.

The speaker then went on to point out that instantaneous relief was possible in a considerable number of cases when assistance was given to the expiratory muscles of the upper thoracic segments. This action might be explained on the ground that it increased the activity in the lower part of the respiratory apparatus—that is, at the lower ribs and abdomen. He showed a simple mechanism which had proved satisfactory in many instances. It consisted of a spring inserted into a broad piece of webbing, which was used to strap the chest.

By means of a tracing he illustrated how the tender triangularis produced a marked thoracic elevation due to contraction of the scalene muscles, which did not relax fully in expiration, and he regarded this as a possible explanation for the spread of pain in an anginal attack. The pain in the neighbourhood of the sternum resulted from stress of the triangularis sterni, which caused increased action of the scalene elevating the thorax, with the consequence that pain was appreciated in the arm, while the gripping in the throat was the result of pain arising from the non-relaxation of this muscle in expiration. These referred pains were found in different types of cases—from true angina to the group of conditions of which asthma, thoracic neoplasm, and chronic bronchitis were representative.

His general conclusions were that fatigued muscles gave rise to referred pains; that the upper respiratory mechanism was excited under the same conditions as were usually associated with anginal attacks (in two of his cases anginal attacks had followed stimulation of these muscles); that the respiratory muscles, when tender, referred pains to those areas which were constantly affected in angina pectoris, and that treatment based upon the hypothesis of muscular strain had proved effective in relieving pain. The progressive ossification of ribs and cartilages, thereby increasing the work of the affected muscles, might explain why the respiratory stress arose at the time of life when angina pectoris commonly occurred.

Sir SYDNEY RUSSELL WELLS said that it almost seemed as if the purely cardiac explanation of angina was becoming discredited. Not only had Sir Charlton Briscoe assailed it from one side but a recent book had assailed it from another, the author declaring that angina was entirely of gastric origin. The arguments brought forward that evening were certainly convincing so far as they showed that there was some connexion between pressure of the muscles referred to and the pains in angina pectoris. It had been definitely shown that there was a sensory reflex between these tender muscles on the one hand, and the areas in which there were painful sensations in angina pectoris on the other. One difficulty, however, was that pressure over so many areas seemed to produce exactly the same series of painful impressions. The suggestion that the condition originated in the fatigue of these respiratory muscles appeared to be negatived to some extent by the fact that in angina pectoris, as a rule, there were very few respiratory symptoms. It had been distinguished by many observers as one of the characteristics of angina pectoris, as apart from other forms of cardiac trouble, that it was not accompanied by dyspnoea. Might not the irritation of these muscles be brought about by pathological processes which also affected the vessels? In grave degenerative diseases of the arteries it was not only the aorta which was affected, and it was quite conceivable that the widespread changes which went on in the chest set up an irritable condition of the muscles and brought about these reflexes. He would like to consider further the arguments brought forward before committing himself to a decided opinion, but he had the feeling, in spite of all that had been urged, that the cardiac origin of angina pectoris was not altogether disestablished.

Sir JOHN BROADBENT commented upon the entire absence of all reference to any disease of the heart in the cases which Sir Charlton Briscoe had brought forward in support of his contention. He did not gather that this respiratory spasm could produce a sudden stoppage of the heart or anything which might bring about sudden death. He had always regarded angina as a warning pain sent out by the heart as an indication that a little further effort would bring it to a standstill. Mackenzie attributed angina to a failure of contractility. It was a danger signal which caused so severe a commotion that very often a biggish dose of morphine was needed to stop it. Supposing the spasm of the muscle was a danger reflex, one could understand how strapping and reduction of the spasm would, on the theory now propounded, relieve the pain, but he failed to see how a strapping of the chest could prevent a danger signal from the heart due to failing contractility on increased exertion, and after all, it was an advantage to get this danger signal rather than that the heart should stop suddenly without warning. He admitted that the pathology of this referred pain was not very easy of explanation. It was not easy to say that one common cause, like failure of contractility, whether from insufficient blood supply or the weakening of the muscle by degenerative change, could account for it. An abdominal angina had been described by many authors, and was said to be a very severe radiating pain, somewhat like tabetic crises, and in many of the cases brought forward the pain might be that of abdominal angina or a severe gastric pain.

Sir WILLIAM WILLCOX said that the society must feel somewhat astonished at having so novel a view of angina pectoris brought before it. Sir James Mackenzie, in his most interesting explanation of angina pectoris, had said that the characteristic gripping pain was caused by spasm of the intercostal muscles, though he did not specifically mention the triangularis sterni. The discussion might really turn upon the question of which was the cart and which the horse. Was the contraction of the respiratory muscle as the sequel of an anginal attack the explanation of the pain, or was the pain caused by the contraction of this respiratory muscle as the primary condition? He confessed that he could not accept offhand the new theory, fascinating as it was. There were several points upon which it appeared to fail at the test. If fatigue

of the respiratory muscles explained the causation of angina pectoris, why were there not attacks of angina pectoris in lung conditions where there was continued over-exertion of the respiratory muscles? The theory did not explain the part which was played by disease of the coronary vessels, of the myocardium, and of the aorta in angina pectoris, as illustrated in the tragic cases which they had seen so frequently. Then, again, if the theory was correct that fatigue of the respiratory muscles caused anginal pain, why should not oxygen relieve the anginal attack, seeing that oxygen presumably would give rest to the respiratory muscles? For his own part he still adhered to the cardiac and aortic explanation of angina pectoris, although Sir Charlton Briscoe's arguments had been most instructive, and had shed a great deal of light on many of the obscure phenomena in this disturbance.

Dr. A. BLACKHALL-MORISON recalled that twelve years ago he had opened a discussion in the same society on this subject. In that discussion it was stated that William Stokes had declared positively that in the course of his long life he had never seen a single classical case of what he understood was meant by angina pectoris, although he had seen many cases of what he called anginal dyspnoea and distress. There was probably little difficulty in coming to a conclusion when one met with a case of true angina, which had a very definite character. In his own experience one clinical fact which he had noticed with great frequency was that after attacks of what was called, perhaps inadequately, true angina, there was a very remarkable and persistent fall in blood pressure. It was in cases of angina minor that dubiety arose as to whether the various pains of the individual concerned did or did not point to a serious condition. It was pretty generally admitted now that afferent influences reached the spine from the viscera. These minor cases had frequently to be watched with great care; no doubt there were some which were dependent on the stomach. He was afraid he must place himself amongst those who had expressed a preference for the older explanation, and he was very sceptical of peripheral manifestations of pain.

Dr. H. W. WILTSHIRE said that the absence of any exact definition of angina added to their difficulties. Sir Charlton Briscoe had evidently used the term in a very broad sense indeed, to include most attacks of a paroxysmal kind, but he thought that that broad use of the term had been justified that evening. In the general ignorance with regard to this condition it was not wise for clinicians to tie themselves down to an over-exact and limited use of the term. Sir Charlton Briscoe had referred mainly, not to major angina, but to those cases of less pronounced character, which, although they did not loom very largely in the textbooks, were met with very frequently in practice, where they caused much perplexity. He had not gathered that Sir Charlton Briscoe meant to claim that all angina was due to respiratory stress, but only that some anginas might be so explained. The facts which he had brought forward were certainly highly significant. He had told them that these muscles sometimes became tender, and, when tender, caused referred pains over wide areas, but that on applying pressure to the muscle in some cases the patient was able to recognize the pain caused as being his own particular breast pang. The speaker could bear that out; he had seen the same thing. Sir Charlton Briscoe had also said that pain of such a nature as would be classed as angina could be relieved by lateral thoracic pressure, and that again was the experience of the speaker. He was not going to give up the cardiac explanation for many anginas; he did not think that Sir Charlton Briscoe would claim to have solved the whole riddle, but only to have furnished some facts with regard to those cases which could not be exactly labelled or docketed, and in so far as he had done this he had helped the rest of them a stage nearer the truth, which had been obscured by the large collection of cases not to be exactly placed. In the meantime, in the present state of our knowledge, it would be safe to conclude that angina was not necessarily only a cardiac phenomenon.

Dr. W. W. STOCKER, speaking as a general practitioner, said that the discussion had made his mind more confused on the subject than before, although he recognized that there was much food for thought in what had been said. He wished Sir Charlton Briscoe would tell them whether the prognosis in the cases of angina caused in the way he had suggested was as grave as in the true angina of cardiac origin.

Sir CHARLTON BRISCOE, in replying to the discussion, said that in answer to Sir William Willcox's challenge to express his own views on the subject, he wished to state emphatically that he did not claim to have proved that the anginal syndrome was solely a respiratory phenomenon. He considered that his explanation of the cause of the pain was based on firmer grounds than that of previous authors. The conviction that angina was solely of circulatory origin was firmly fixed in the minds of the profession; so firmly, that in reading through monographs on this subject he found that practically no mention was made of any organ of the body other than the heart and the aorta in the *post-mortem* reports on cases dying during an attack. A consideration of any alternative view was considerably hampered by these omissions. At the same time, the differences recorded in the blood pressure relative to antecedent and subsequent observations, in the size and rate of the pulse, in the account of flushings or pallor of the face, sweating, and so forth, during observed attacks were remarkable. The two most constant phenomena were the pain and the fact of some unusual incident referable to respiration. The latter was interpreted as being dependent upon circulatory disturbances and no recognition was taken of the fact that it might possibly be the primary cause of the condition. In general, it was possible to explain the causes of an attack on a respiratory theory equally well or better than on a circulatory. In most of the conditions in which the main vessels showed serious deterioration similar phenomena might be anticipated in the smaller vessels supplying the various muscles. Possibly in the triangularis sterni more than other muscles, for it was, like the heart, one of the muscles constantly at work, contracting probably more than fourteen times a minute, Ischaemic conditions of the respiratory muscles might be expected to produce pains similar to those in an intermittent claudication. He was inclined to think that the true severe anginal attack should be regarded as the most acute type of a series in which the so-called hysterical attacks represented the mildest form.

Sudden death on the basis of the respiratory phenomena put forward was quite explicable on the following grounds. The right auricle was supplied with blood by two mechanisms—first, the negative pressure in the chest consequent upon inspiration; secondly, positive pressure in the abdomen resulting from contraction of the abdominal muscles countering the descent of the diaphragm. With the marked upper thoracic type of breathing, whether natural or spasmodic, the tone of the abdominal muscles was diminished or absent. The alternative mechanism of blood supply—negative pressure in the chest—was therefore acting alone, and if diminished, as by respiratory standstill, and as the general accounts of an anginal attack suggested, the natural sequence would be considerable diminution, if not suppression, of the blood supply to the right heart. This would account for facial pallor and for alterations in the pulse. The effect would be far greater where the main circulatory organs were markedly diseased. He considered that the whole question of the mechanism of the attack should be viewed with a healthy scepticism.

LIGATION OF THE INNOMINATE ARTERY.

AT the meeting of the Section of Surgery of the Royal Society of Medicine on December 7th Sir CHARLES BALLANCE discussed the ligation of the innominate artery, and described in detail four cases in which this operation had been successfully performed for aneurysm of this artery (aneurysm of the bifurcation); he also showed lantern views to illustrate the technique. He said that a clear appreciation of the anatomy of the region concerned was of the first importance in the performance of the operation. From the anatomical point of view the ligation of the innominate artery was a cervical operation by no means difficult of performance. There was no risk of injury to the pleura if the artery was approached from the front and from the tracheal site, and if the knife was not used outside the limits of the pulsation area. But from the pathological and operation standpoints he had found that it was necessary and desirable to remove bone so as to obtain a clear and free exposure. Each case required a different plan of operation, and his illustrations showed

the sections of bone removed in the four cases which he took as his text. As soon as the left innominate vein and the upper border of the arch of the aorta were defined the rest of the operation was fairly easy. Whenever bone removal was decided upon it could be safely accomplished if the fingers of the left hand were inveigled into the superior mediastinum so as to protect the structures therein from injury. When the bone had been removed the edge of the pleura could be pushed to one side by stroking with wet gauze. Sir Charles Ballance laid particular stress on four points: The first was that cases about to be submitted to this operation should not be previously treated by the method of Valsalva. The second, that there was a group of cases of aneurysm of the innominate artery (aneurysm of the bifurcation) which were suitable for proximal ligature. Distal ligature caused the aneurysm to become a diverticulum of the aorta, and so increased the pressure within it; this procedure should not be followed when proximal ligature was possible. His third point was that the presence of aneurysms necessitated the removal of a part of the sternum in order that a free and clear exposure of the vessel below the aneurysm might be gained. Finally, the ligation of the innominate might be safely and surely accomplished if the ligatures were tied in a stay-knot without rupturing the coats. While he would not magnify the difficulties of the operation, he could not quite accept the gay comparison of the late Sir W. Mitchell Banks, who said that in contrast to the ligation of the first part of the subclavian artery, the ligation of the innominate artery was a "surgical amusement."

Sir CHARTERS SYMONDS said that it had not fallen to many of them to ligature the innominate artery, apart from wounds in war, but he recalled one such operation which he did some years ago. The case was an aneurysm of the subclavian which raised the clavicle and filled the posterior triangle. On carefully studying Sir Charles Ballance's recommendations published at that time, it seemed to him a case in which he might ligature to the first part of the subclavian. Therefore he divided between the head of the sterno-mastoid and passed an aneurysm needle round the artery. For some reason which he did not understand there was a furious rushing of blood, with considerable noise. He withdrew the needle and it ceased, and on repeating this manœuvre the same thing occurred again. He then incised the sterno-mastoid and exposed the innominate, which he secured with floss silk, and the patient got well and the aneurysm dwindled. Afterwards the old sac suppurated, but notwithstanding this the patient made a good recovery and lived for some years. In the war one had to ligature the innominate artery on various occasions, but there the anatomical conditions, if the operation was taken in hand early enough, were such that it did not seem necessary to remove part of the sternum. If the sterno-clavicular region was quite free from the aneurysmal sac, it seemed to him that to adopt the method of incision inside the sterno-mastoid and draw to the carotid gave one a fair opportunity.

Sir CHARLES BALLANCE said that he did not recommend the removal of part of the sternum for subclavian aneurysm, but only for cases of aneurysm of the innominate (aneurysm of the bifurcation). Asked by the President of the Section (Mr. RAYMOND JOHNSON) what he recommended as ligature, he said that he had used kangaroo tendon, which had the advantage of being absorbed less quickly than catgut. He had also used goldbeater's skin, which was recommended to him by Lord Lister; this took about the same time to absorb as kangaroo tendon, and both these substances were absorbed from their surface, while catgut was not absorbed only from the surface, because the plasma cells worked their way through the interstices right into the centre, so that there was central absorption as well. He preferred materials which were subject only to surface absorption. He added that he could recall a time when the belief was very frequently held that catgut came to life again in the body. It was Lister, of course, who explained how each little particle of catgut was absorbed and living cells put down, which living cells, spinning fibrous threads, replaced those of the catgut.

A New Operation for Inguinal Hernia.

Sir LENTHAL CHEATLE read a paper on "A new operation for inguinal hernia," which is printed in full at page 1025.

Mr. PHILIP TURNER said that he quite agreed with Sir Lenthal Cheatle that the complete removal of the sac was the important part of the operation. For many years he had been accustomed to operate on inguinal herniae simply by removing the sac, without in the great majority of cases any suturing of the muscles. He began this practice with young children, extended it to older children, and finally to adults. He could quite understand that it did not matter what sort of sac one had, how large or extensive it was, for one could remove it perfectly easily by the method described. The method gave one the opportunity of exploring the rings and canals on both sides.

DIAGNOSTIC VALUE OF VIBRATION SENSE.

THE third ordinary meeting of the Liverpool Medical Institution took place on December 1st, with the President, Dr. J. E. GEMMELL, in the chair. Dr. W. JOHNSON read a short paper on the diagnostic value of the vibration sense. He pointed out that the work of Dr. J. L. M. Symns and Dr. E. J. Wood, in the Guy's Hospital Neurological Department, had, by establishing a quantitative method of estimating the sensation, rendered feasible the investigation of the vibration sensation at the bedside. The tuning-fork devised by Dr. Symns for the purpose was demonstrated. By means of this tuning-fork it was possible to show the presence of a definite diminution in the vibration sense in certain nervous diseases before the cutaneous forms of sensibility showed any loss. Thus the observation assumed clinical importance in the early stages of tabes dorsalis, peripheral neuritis, and lesions involving the sensory paths in the spinal cord. The point was emphasized that in cases where cutaneous sensory loss was definite investigation of the vibration sensation was comparatively unimportant.

Mr. J. H. RAWLINSON read a paper on some genito-urinary cases, drawing attention to frequent errors in diagnosis, and for their avoidance emphasized the importance of thorough investigation of the urine and catheterization of the ureter. He contrasted the symptomatology of tuberculous pyelitis with septic pyelonephritis, the latter being more often bilateral than the former. He referred to treatment by lavage of the renal pelvis through a ureteral catheter, and discussed the treatment of bleeding after prostatectomy. He stated that 75 per cent. of renal stones passed spontaneously, and that *Bacillus coli* occurred in more than 50 per cent. of cases of pyelitis.

ENCEPHALITIS LETHARGICA.

AT a meeting of the Pathological Section of the Liverpool Medical Institution, held on December 8th, with Dr. J. E. GEMMELL, the President, in the chair, Professor J. M. BEATTIE read a paper on encephalitis lethargica. He dealt mainly with the pathological conditions found in encephalitis lethargica, basing his remarks on the *post-mortem* examination of three cases.

The main pathological changes found were the congestion, both in the membranes and in the cerebral tissues, and the perivascular infiltration with occasional haemorrhages in this Virchow-Robin space. The nerve cells showed very marked degenerative changes, such as pigmentation, eccentricity or loss of nucleus, and vacuolation. Neuronophagia was present, but only in a minor degree. Irregular rounded or oval bodies, sometimes with an apparent central spot, were seen in the nerve cells, but these were thought to be degeneration products, and remains of Nissl granules. Very large numbers of "hyaline bodies," described by Boyd and by various Italian observers, were demonstrated, especially in one case (a woman aged 48 years), but they were present also in the other cases (aged 54 and 19 respectively). The relation of these to corpora amylacea was discussed, and Professor Beattie concluded that the bodies were produced by degeneration of myelin. They had no proved etiological significance in the disease, as stated by some of the Italian workers, but their presence could not be regarded as accidental, and as having no special pathological relation to the virus of encephalitis. It was shown in one case, where the first symptom was ophthalmoplegia, that these bodies were present in considerable numbers in the optic nerve, and were especially associated with a perivascular infiltration of the sheath of the nerve. The bacteriological

findings and the experimental production of the disease was discussed. Reference was made to the recent communication of Delaunay suggesting that encephalitis lethargica was a form of rabies, and the similarity between the pathological findings in the two diseases was dealt with. The relationship of the disease to poliomyelitis and to influenza was also discussed.

Professor Beattie concluded that the disease was a distinct entity; that the nasopharynx and salivary secretion harboured the virus, and that it was important, therefore, that throat and nose disinfection should be urged. He made an appeal for a co-operation between the pathologist, the bacteriologist, and the physician in the investigation of this disease, both during life and in the *post-mortem* room; and he especially urged that the *post-mortem* examinations should be undertaken only by thoroughly trained and experienced pathologists.

TUBERCULOSIS IN CHILDREN.

AT a meeting of the Pathological Society of Manchester held on November 9th, 1921, with Mr. HOWSON RAY, the President, in the chair, Dr. C. P. LAPAGE opened a discussion on tuberculosis in children. He pointed out the frequency of tuberculous infection in children, as illustrated by (1) *post-mortem* examinations at the Children's Hospital, Pendlebury. These showed the great frequency of glandular tuberculosis, in many cases without disease of the organs. They also showed that cavitation of the lungs in babies is not uncommon. (2) *X*-ray examinations to demonstrate thoracic tuberculosis. (3) The results of the von Pirquet skin reaction in 1,000 children, as demonstrating the incidence of non-fatal tuberculosis in the age periods of childhood. Nos. (2) and (3) were correlated to the clinical examination, and the close correspondence between the three methods of examination pointed to the fact that tuberculosis in its early stages should be recognized by symptoms and history rather than by physical signs.

The one thousand cases were divided clinically in five categories—that is, negative, possible, suspicious, probable, and positive. Even the suspicious cases had no physical signs, but only pallor and debility, some loss of flesh, and an indefinite cough, and in some cases with a history of infection in the home. These were often tuberculous, and when tested with the von Pirquet test at the different age periods gave results as follows:

0–2, 5%; 2–5, 62%; 5–10, 67%; 10–14, 59%.

The frequency of tuberculosis and its variability in different areas was discussed in relation to the milk supply, the conclusions reached being that, though infection from human sources was much the more common and more dangerous, yet the danger from tuberculous milk was very real, especially when the likelihood of massive doses was present. The autopsies seemed to show that the tubercle bacillus could pass through the damaged mucous membrane, and clinically this seemed possible, especially if some illness, such as chronic enteritis or bronchitis, lowered the health of the child and produced local inflammation and perhaps stagnation. Closed or open disease resulted. In some cases there was a marked bacillaemia, resulting in generalized tuberculosis. In others tubercle bacilli were disseminated to various parts of the system where they might remain latent; then at some subsequent period of lowered health, with perhaps local injury, they might be lighted up and form isolated areas of disease, such as nodules or joint or bone trouble. The mode of spread was, however, more often by the lymphatic system. Tuberculosis was shown to be a very fatal disease, especially in young children, the death-rate falling very rapidly after the second year—that is, 25 at 0 to 1 year, rising to 40 at 1 to 2 years, and falling to 20 at 2 to 3 years. A great deal of non-fatal tuberculosis occurred, but every effort should be made to postpone infection as late as possible on account of the very high death rate at the early age.

Mr. E. D. TELFORD discussed the subject from the surgical aspect. His figure for bovine infection in Manchester was 50 per cent., the route of infection being, as a rule, via the digestive tract. The average age of clinical onset in a large series was 3½ years, from which he deduced a fairly long latent period after the original infection. In younger infants tuberculosis tended to be more acute and more generalized. Mr. Telford discussed the sites of surgical tuberculous disease and the influence of injury and pre-existing simple disease in determining the site of tuberculous infection later. The different types of cold abscesses and the results of aspiration were given. The effects of rest were discussed with special reference to the operative fixation of joints as opposed to formal excision. Finally, some points were mentioned regarding the prognosis and ultimate fate of the healed cases.

MEDICAL ASPECTS OF DELINQUENCY.

AT the last meeting of the Medico-Psychological Association of Great Britain and Ireland, held at the rooms of the Medical Society of London on November 22nd, under the presidency of Dr. C. HUBERT BOND, a paper on the medical examination of delinquents was read by Dr. M. HAMBLIN SMITH, medical officer to H.M. Prison, Birmingham. He began by saying that John Howard's book on prisons as he found them in the eighteenth century showed that the medical side was then practically non-existent. Though many of the prisons had a surgeon attached to them, he seemed to come in only when specially required. For many years past, however, every prison had had a regular medical officer as part of the establishment, and his duties and functions had undergone remarkable developments. The larger prisons were now well built and well equipped, and the nursing staff had altered for the better. The medical officer had opportunities, especially in the case of long-term prisoners, of observing the effects of diet and work, as well as watching the development, in either direction, of various forms of disease. It was of great interest to note how various physical ailments conduced to delinquency, though only so far as they affected the mental life. This might come about in several ways. A man suffering from such a physical defect as hernia, tuberculosis, defective vision, was handicapped in earning his living in the competitive labour market, and hence was predisposed to break the law. The early formation of good habits of industry must be a preventive of delinquency, but the physical defective from cardiac or phthisical disease was unable to work regularly; the physically weak child was often kept away from school—thus not only were bad habits formed early, but these persons received more than the usual sympathy. A boy with defective vision would be a constant trouble to his teachers, who, ignorant of the defect, would punish undeservedly, producing in the child a mental conflict which might result in delinquency. This was now largely prevented by the present system of school inspection. Moreover, the tendency of certain physical disabilities was to make their victims antisocial, owing to the feeling that they were not as others.

But, continued Dr. Hamblin Smith, the medical officer's duties soon grew beyond the mere treatment of physical ills; it became evident that no uniformity could be carried out in the way of diet, work, and punishment for infractions of discipline. The medical officer therefore had to exercise much discretion. There had been a great development, too, in the mental side of the work. Probably the official's work was originally confined, in this respect, to certification of cases of legal "insanity"; prisoners were held to be either normal or insane, in a rigid sense. It was seen, however, that a man though not insane might have a mentality which showed a deviation from that of the strictly normal person, and many of this type found their way into prisons. Largely, these abnormal cases were placed now under the medical officer's direct charge. These persons finding their way into prisons could now be certified under the Mental Deficiency Act, 1913. It was clear that conduct was the direct result of mental life. There could no longer be the rigid division of prisoners who were normal and those who were insane; every offender presented an individual problem, hence he needed separate investigation. Probably, however, public opinion was not yet ripe for such universal investigation, though the courts and the public should be educated up to the need of this. The author had long given careful consideration to the elucidation of the problems connected with the mental aspect of delinquency, and he had devoted much time to the selection and application of a scheme of tests. His earlier work was done with the Binet scale, but he became dissatisfied with that scheme; moreover,

he was not satisfied as to the propriety of much talk at the present day about "mental age." He was dealing with the test he now used in a book shortly to be published. Wonderful light had been shed on these problems of delinquency by the so-called new psychology, and he considered that this made these problems very hopeful. He was not saying there was always a mental conflict at the root of delinquency, nor whether such conflicts were always of a sex character. But he felt certain that such a conflict was present in many cases, and the discovery of this might alter the whole aspect from which the particular offender was regarded. He thought a scheme would need to be devised for the placing of suitable cases under the care of official psycho-analysts. At Birmingham the author was an integral part of the city's scheme for dealing with its delinquents. Dr. W. A. Potts had been appointed to examine cases which it was not desired to send to the remand part of the prison. The male and female Remand Departments were arranged and worked, as far as possible, on hospital lines, the idea of prison being kept out of sight. Dr. Hamblin Smith then described the routine followed. It was now very rare to get a mental defective or a psychosis case from the city of Birmingham on conviction. He advocated the division of the country into convenient districts, each having a properly equipped prison with a special medical officer in charge, to which all cases requiring mental examination should be sent. The only alternative plan would be to have travelling mental examiners in each district, who could attend when required. His conclusion was, that uninvestigated offenders were the most expensive luxury that any community could indulge in. He thought there should be a closer union between the prison and asylum services; there might be a unified service, working in each district under a local head, who would be the director and inspirer of the work. Lastly, Dr. Hamblin Smith detailed the requirements which psychiatrists should possess for this work, and referred to the intention of the University of Birmingham to hold, next summer, an intensive course of lecture-demonstrations.

Dr. W. A. POTTS confirmed the opinion that every offender was worthy of investigation, and that this procedure turned out in the end to be economical. He alluded also to the importance, in doubtful cases, of the supposed offenders being examined without going to prison, so that their self-respect was preserved.

Dr. J. T. DUNSTON (Commission of Mentally Disordered and Defective Persons of South Africa) spoke of what he saw during his recent visit to New York State. Each person sentenced there to a year or more imprisonment went through a thorough medical examination. A beautifully fitted reception prison was being built, and next to it a large medical institute, under the stimulus of the National Committee for Mental Hygiene. So far the work had been done, under some difficulty, by Dr. Glueck. After the medical examination each case was examined by a psycho'ogist, who had the final "say," for he settled whether the prisoner was defective, or maladjusted, or actually insane. If normal the man was recommended the right vocational training or treatment. Hence every felon's fate was decided, not by the magistrate, but by the examining psychiatrist. In Chicago every juvenile delinquent was examined by a psychiatrist, who sat beside the judge as assessor, and made a rapid diagnosis. In Massachusetts, however, a most detailed personality study was made. In America the prevailing view seemed to be that it was the individual who really mattered, not the crime.

Mr. A. H. TREVOR (Commissioner of the Board of Control) said it was impossible to hear what was being done in Birmingham and in America for keeping defective persons out of prison without sympathizing with such efforts to the full. Sir ROBERT ARMSTRONG-JONES spoke of an effort being made to found a Magistrates' Association, one object of which would be to secure greater uniformity in dealing with similar offences in the various districts.

"*Forgetting.*"

A short paper entitled "Forgetting" was read by Dr. H. DAVIES JONES, of Littlemore Hospital, Oxford. He explained that he was not attempting to deal with the complete amnesias met with in the practice of psycho-analysts. Freud claimed that forgetting, whether for words or deeds, was not a fortuitous occurrence, but that a reason could usually be revealed by psycho-analytic methods. A means of gauging the value of an amnesia was the emotional effect accompanying it; he spoke only of cases in which a sufficiently deep impress had been made. Forgetting was not a passive but an active process; people forgot because they did not wish to remember something unpleasant, because it clashed with their innate tendencies. Each time the undesired memory recurred, an attempt to repress its expression was made, and eventually the repression would become a part of the unconscious self. Still, it possessed a latent energy which could not be destroyed, and expression would occur by devious routes. Methods of psychological analysis enabled this to be brought again to consciousness and a better adjustment made. To achieve this Freud employed the method of free association. Dr. Davies Jones quoted cases to illustrate his thesis.

The paper was discussed and praised by Drs. JAMES STEWART, C. STANFORD READ, BEDFORD PIERCE and A. E. EVANS, and the author replied.

TREATMENT OF PUERPERAL INFECTION.

A MEETING of the West London Medico-Chirurgical Society was held at the West London Hospital on December 2nd, with the President, Sir G. LENTHAL CHEATLE, K.C.B., in the chair, when a discussion on the treatment of puerperal infection was opened by Dr. FREDERICK J. MCCANN.

He compared the nature of puerperal infection with that of ordinary septic wounds. The normal sequence of events in a healthy puerperium was attained chiefly by the increased vascular and lymphatic supply of the involuting uterus. He emphasized the importance of wounds of the cervix, vagina, and vulva as sources of infection, and criticized the orthodox teaching that infection usually originated within the uterus.

After alluding to the modes of spread and the general course of the infection, he proceeded to discuss the importance of prophylactic measures. He deplored the present defect in our hospital system which provided such scanty accommodation for puerperal cases. The teaching of obstetrics also should be improved. Medical officers of health should be empowered to admit to hospital women whose domestic surroundings were unsuitable for a confinement. The application of forceps and the introduction of the hand into the uterus should be regarded as major operations. Rectal examination should be avoided; its disadvantages were obvious. Vaginal and perineal wounds and deep cervical tears should be carefully cleansed and sutured. With regard to the treatment of infected cases, in the first place extragenital sources of infection must be excluded. Exploration of the uterus was only permissible in the severer types of cases, or after any likely source of infection in the lower genital tract had been excluded. The curette should be used as a probe only or for gently removing any loose fragments, and never as a scraper. Puerperal peritonitis and localized abscesses must be dealt with on ordinary surgical lines. Subcutaneous salines, free purgation, and the judicious use of quinine were all valuable. In his experience, serums and vaccines were, on the whole, disappointing.

The PRESIDENT said he disapproved of the use of spirituous lotions in the prevention of cracked nipples, and advised the use of plain soap and water. He warned against placing too much reliance on the alleged antiseptic properties of many gauzes on the market.

Dr. REMINGTON HOBBS was strongly in favour of uterine drainage, as in his opinion the rise of temperature was due to mechanical blocking of the uterine outlet by malpositions of the uterus, oedema of the cervix, and overloading of the rectum. For this purpose he used a small rubber catheter. After cleansing the genital passages the catheter was introduced into the uterus by means of a special forceps made to his design; 10 c.cm. of a glycerin and iodine mixture (in the proportions of 7 to 1) were then injected into the uterus. It might be necessary to repeat this injection on several consecutive days, according to the course the temperature took. He showed a series of temperature charts which bore out the efficacy of this line of treatment.

Dr. H. J. F. SIMSON referred to the importance of prophylaxis, and wondered to what extent the glycerin was responsible for the success of Dr. Hobbs's treatment.

Dr. KNYVETT GORDON stated that an experience of 250 cases had led him to believe that the best line of treatment was curettage, saline infusions, and the use of serums (according to the bacteriology) in large doses, combined with saline. Laparotomy and even hysterectomy were indicated in the severer cases.

Dr. BERNARD SPILSBURY referred to the severe type of case usually seen by him, in some of which death occurred as early as twenty-four hours after infection. There was in these cases little macroscopic evidence to account for the infection. He felt encouraged by the line of treatment advocated by Dr. Hobbs.

Dr. J. BURNFORD laid stress on the importance of bacilluria as a cause of fever during the puerperium. Bacteriological examination of the urine should be a routine procedure in puerperal cases associated with pyrexia. Other speakers included Dr. MALCOLM DONALDSON, Dr. LAPTHORN SMITH, Dr. VAUGHAN PENDRED, Dr. SANGUINETTI, and Dr. F. G. LLOYD.

Dr. MCCANN, in replying to various points in the discussion, agreed that for cracked nipples simple washing with soap and water sufficed. He did not advocate the retention within the uterus of any instrument used for lavage or drainage, as he considered it would interfere with the normal contraction and retraction of the organ.

WAR METHODS ADAPTED TO GYNAECOLOGICAL SURGERY.

AT the inaugural meeting of the Nottingham Medico-Chirurgical Society Dr. FRANCES IVENS of Liverpool gave an address on some personal experiences of war methods adapted to gynaecological surgery.

She stated that early in the war her attention had been drawn at the Pasteur Institute to the value of anti-gangrenous serum. She had used it during 1915 and 1916 in a few instances, but the supply was inadequate for the large numbers of badly infected cases arriving at her hospital after the Somme offensive, and many died from gas gangrene. The results were infinitely better in 1918, when the three principal organisms had been differentiated and an efficient triple serum prepared. In spite of the numbers of badly wounded there were practically no deaths from gas gangrene among the cases treated prophylactically and curatively by the Weinberg serum, although there were deaths from gas gangrene among the cases in which, from the inadequacy of supply, no prophylactic dose could be given. A decrease in mortality from streptococcal septicaemia was also noted in the cases treated by the polyvalent serum of Leclainche and Vallée, and its prophylactic use in badly infected wounds was associated with improved results.

She had endeavoured to apply some of this experience to gynaecological surgery, and had used the combined antigangrenous and antistreptococcal serum with excellent results in cases of Wertheim's operation for carcinoma of the cervix where infected and necrotic growth was present. She had also found it of service in cases of malignant disease involving resection of bowel, and in the abdomino-perineal operation for carcinoma of the rectum. It was important to dilute the serum with normal saline, and its administration during anaesthesia lessened anaphylactic phenomena. Reference was also made to the treatment of puerperal sepsis by Vinaver's antistreptococcal serum, where the results had been encouraging.

Miss Ivens then discussed the use of antigonococcal serum as an adjunct to conservative surgery in gonococcal infections where mutilating operations had been so uniformly practised in the past. Her experience was based on the results of its use in forty cases, in the majority of which salpingitis had been the prevailing feature. Nicolle's serum had been employed and was administered as follows: (1) By intraperitoneal injection during laparotomy; (2) by subcutaneous injection after dilution with normal saline; and (3) by vaginal serum packs alternating with dressings of 10 per cent. salt solution mixed with 5 per cent. carbolic lotion. In the majority of cases the pus tubes were opened up and 20 c.cm. of serum injected into them or left in the pouch of Douglas. The tubes were not removed unless very extensively damaged, and the abdomen was closed without drainage. All the patients had made an immediate recovery, and the results in cases of salpingo-oöphoritis, endocervicitis, arthritis, and especially in puerperal gonococcal infections were excellent. Many cases had been followed up and were in good health, presenting a marked contrast to cases treated without serum. Three cases required further operation, but the possibility of reinfection could not be excluded. Miss Ivens considered that her results warranted extended study and experiment with a reliable serum.

X-RAY DIAGNOSIS WITH ARTIFICIAL PNEUMOPERITONEUM AND PERINEPHRITIC EMPHYSEMA.

AT an informal meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine on December 9th Dr. CARELLI, of Buenos Aires, gave a demonstration of his method of producing an artificial pneumoperitoneum for the *x*-ray exploration of the peritoneal cavity, together with a modified procedure for the investigation of the kidney. Dr. Carelli, whose work appeared originally in the *Rivista de la Asociacion Medica Argentina* in 1920 and 1921 (Nos. 183–5 and 200), did not claim that the inflation of the peritoneal cavity by means of oxygen as a preliminary to radiography was his own introduction; the method was first brought forward by Weber, in Germany, followed by other workers in that country and in Italy and America, and the first article on the subject in English, by Mr. J. E. H. Roberts, appeared in the BRITISH MEDICAL JOURNAL of November 13th, 1920, page 742. But Dr. Carelli appears to have improved the process, particularly as applied to the upper urinary passages. The large *x*-ray films which he showed on the viewing screens were received with acclamation. They illustrated with wonderful clearness the topography of the abdomen. The more solid organs, like the liver, spleen, pancreas, uterus, and ovaries, were discernible, their volume, shape, and relations could be appreciated, and in many instances it was possible to detect pathological changes. In some of his examples he was able to point to cysts of the ovary, stones in the gall bladder, abnormalities of the liver, fibroid of the uterus, and other conditions.

The plan which Dr. Carelli follows is, in the first place, to empty completely the digestive tract by a saline purge, and afterwards to puncture the abdominal wall with a long platinum needle of less than 1 mm. in diameter. When it is certain that the point of the needle is within the peritoneal cavity oxygen is passed in slowly, and radiographs are taken in different positions according to the area which it is desired to explore. It is very important afterwards to withdraw the oxygen, which is done by means of a small trocar. Out of 750 administrations he has had only one accident, due to an unsuspected condition in the patient. The kidney, being extraperitoneal, is not well shown in a pneumoperitoneum, and Dr. Carelli's procedure here, using practically the same apparatus, is to create an artificial emphysema around the kidney. After taking a preliminary radiograph for localizing purposes, he makes a lumbar puncture and inserts a fine platinum needle just above the tip of the transverse process of the second lumbar vertebra. As soon as this process is reached the needle is manœuvred so as to avoid it, and then, watching the respiratory movements with the aid of a manometer, which indicates when the perirenal connective tissue is reached, he injects carbon dioxide of very pure quality. The absorption is rapid, and the radiographs have to be taken as quickly as possible. The patient experiences a certain amount of discomfort in the lumbar region, but this is said to disappear within less than half an hour. The pictures, both of the normal and pathological kidney and the suprarenal gland, obtained by this means again evoked the applause of the audience.

Some questions were asked of Dr. Carelli with regard to the photographic side of his technique. He uses an ordinary Snook transformer and Coolidge tube, making his exposures with a double intensifying screen upon "duplitized" film. The exposures range from 0.2 to 0.4 second, and in the case of the kidney, save with stout people, are usually even shorter than this. Skiagrams

of a pneumoperitoneum are taken at a distance of two or three metres and of the kidneys at 60 or 70 cm. He illustrated an *x*-ray table which he has designed with the assistance of some of his colleagues. It is a mechanism which appears to be capable of inclination at every possible plane, while still preserving a uniform distance between tube and patient. The patient himself can be rotated quickly and completely by means of canvas slings. Dr. Carelli has lately been demonstrating this method in the radiological department of Dr. Delherm, in Paris, and he is shortly proceeding to the United States. The first actual demonstrations with patients in London were carried out at the French Hospital on the previous day, and Dr. HERNAMAN-JOHNSON told the Section that two most excellent results were obtained. The thanks of the meeting were voted to Dr. Carelli, on the proposition of Sir ARCHIBALD REID, supported by Dr. G. H. ORTON and Dr. E. P. CUMBERBATCH, the President of the Section, and Dr. CARELLI, in replying, emphasized the fact that he only brought forward the procedure for cases in which clinical diagnosis by ordinary means was not possible.

Reviews.

A TEXTBOOK OF PATHOLOGY.

"PATHOLOGY and clinical medicine are, after all, the same thing viewed from different angles." This is the principle on which W. G. MACCALLUM has written his *Textbook of Pathology*, which has now reached its second edition.[1] He has sought to deal with all sides of pathological processes, not only the anatomical, but also the chemical, the physiological, and the clinical. The subject is now so vast that an author is apt either to try to do too much, giving a confused account which special knowledge only can unravel, or to relapse into a degree of incompleteness which defeats its object. The book is forbidding in size and weight, and cannot be said to escape altogether either of these defects. The author states that it is not intended as a complete book of reference, and many not uncommon pathological conditions are hardly touched upon: the title is therefore to this extent misleading. He has set himself the task of treating pathological processes from the point of view of the injury causing them, and includes not only the immediate but also the more remote results. This inevitably leads to a certain amount of repetition, as the reactions of organs to different infections and other stimuli often differ but slightly.

Nevertheless the book is welcome, because it deals with each infective agent, and the reactions of the body to this agent, as they are met with in the patient, while the ordinary textbook of pathology too often tends to be a mere description of a pathological museum. The chapters on bacterial and spirochaetal infections are especially valuable from this standpoint. This new edition incorporates a great deal of experience gained first-hand in the war, and in addition a large amount of the work done under the same circumstances by others; it is one of the first books to be published which includes a comprehensive survey of the advances then made. Investigations carried out in America naturally take first place, as the book is founded on a course given to the second-year students of the College of Physicians and Surgeons at Johns Hopkins University; but the work of other nations, especially that of the British and Japanese on parasitic diseases, is also incorporated.

The first eight chapters deal with the disturbances of the physiological and biochemical properties of the circulating fluids and cells of the body, and could have been shortened by assuming that the reader possessed more knowledge of physiological processes; such knowledge is essential to any student of pathology. These earlier chapters are rather of the nature of a concentrated general pathology, with a few physiological, chemical and cytological fragments incorporated, though they are stimulating in that they expose many loose explanations which pass muster in this immense and still embryonic subject.

Chapters IX to XVII deal with the defences of the body against injury, including in this the processes of inflammation, immunity and repair. An endeavour is made to separate the processes of repair from those of inflammation, though the definition given of the latter is so vague as hardly to be a definition at all, and it is admitted that the two processes may proceed simultaneously "inextricably mingled in the same area." The discussion of the various types of wandering cells is chiefly based on the work of Maximow, who derives from the lymphocyte most of the mononuclear groups, including also the macrophages of Metchnikoff; the work of Opie on the different ferments of the wandering cells is also emphasized. The section on immunity is a very brief summary in which the side-chain theory of Ehrlich is strongly supported. This section is so concentrated as to be difficult of absorption, as is also the next—that on acidosis. The processes of repair are dealt with on the lines of their interpretation by comparison with the growth of tissues *in vitro*, at present perhaps a dangerous analogy. Chapters follow on the inflammatory actions and the attempts of repair in certain organs, including one devoted to the kidney and one to the liver. These are written in a discursive fashion and are rather of the nature of critical and somewhat destructive essays than of courses of instruction for the ignorant.

In chapters XVIII to XXIV forms of mechanical, physical, and chemical injuries are discussed, and special emphasis is laid on the results of obstruction in the various systems of the body—respiratory, alimentary, excretory, and circulatory. It is difficult, however, to understand why the various forms of circulatory failure, due to such conditions as myocarditis or disturbance of the conductive system of the heart, should be grouped under obstructive lesions. The chapters on obstruction in the alimentary and excretory systems are valuable because they group together matters of great clinical interest which are usually found either not at all or widely scattered in pathological textbooks.

Chapters XXV to XXXVII constitute the most valuable part of the book, as they put forward with clearness and precision the modern views of bacterial diseases, each infecting agent and the lesions produced by it being considered separately. This is the section in which the work the great war stimulated is chiefly incorporated. Prominence is given to the recent American work upon the various forms of bronchopneumonia which different cocci produce, and the most modern groupings of the streptococci and pneumococci are set out. Many of these bronchopneumonias are stated to be of the nature of interstitial invasions, a view which is fashionable in America now, to a large extent owing to its advocacy by the author himself, but which is perhaps to be accepted as yet with reserve. The chapters on syphilis are full and thoroughly up-to-date. Colles's law is explained as being an infection of the mother without symptoms, the infant being infected by the placenta; but no explanation is given how the mother harbours the organisms without giving evidence of this. The wide distribution of syphilitic granulation tissue which does not take the nodular form of gummata is rightly emphasized.

Two chapters on the diseases due to animal parasites are followed by others on the pathology of the blood and blood-forming organs. Emphasis is laid on the work of Bunting and others, on the regeneration of bone-marrow after its destruction by ricin, benzol, etc., and on the bearing of the facts on such problems as that of pernicious anaemia. The question of the leukaemic group of diseases is discussed very fully, status lymphaticus being included here. Hodgkin's disease is also added for structural comparisons, but it is recognized that its origin is probably infective.

Diabetes is held to be essentially pancreatic in nature, and stress is laid on the perfusion experiments of Admont Clark, showing that the perfusion of a sugar solution through the pancreas greatly aids its assimilation by the heart. Excess of thyroid secretion is considered to be an insufficient explanation of exophthalmic goitre, a condition in which, it is argued, the organs of internal secretion are all more or less involved; the sympathetic system is also vaguely implicated. In the discussion of the adrenals and their function the work of English observers, which established the whole matter, is ignored. Vague statements are also made about the presence of adrenaline secreting tissue elsewhere than in the suprarenal medulla, but in man the paraganglia disappear almost immediately

[1] *A Textbook of Pathology.* By W. G. MacCallum. Second edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1920. (Roy. 8vo, pp. 1170; 575 figures. 45s. net.)

after birth. The diseases associated with the pituitary body are treated on the lines of Cushing's experimental work. Two chapters follow devoted to the pathology of bones, in which the possible relation of vitamin deficiency is entirely omitted; even though the author may not believe in the theory, the experimental evidence is sufficiently strong to demand a passing mention. The final chapters are devoted to the consideration of "tumours," and a classification is given which is rightly stated to be an arrangement—good for practical purposes—rather than a true classification, as the latter is impossible until their etiology is known.

The illustrations are throughout good, and bring out clearly the points discussed, though the absence of explanatory lettering makes their interpretation at times conjectural. Photographs are mainly relied upon for macroscopical illustrations, and are throughout of a very high standard. Most of the microscopical illustrations are reproductions of drawings, the only poor ones being certain confused microphotographs of lung conditions which could with advantage be replaced. The coloured illustrations though few, are good, and a novel and useful feature is the introduction of sections of tissues seen under the low magnification of a hand lens. References are given at the end of each chapter which refer to papers (mostly of recent date) dealing generally with each subject, from which the more particular work can be found. The printing throughout is admirable, except for a few misprints. The book is to be recommended not only to students, but also to the practitioner, as it gives him pathology from the point of view from which he himself sees it, not as an abstract subject, but in its direct relation to the problems of clinical medicine.

PROFESSOR HAMMAR OF UPSALA.

THAT eminent histological anatomist Professor JOHAN AUGUST HAMMAR of Upsala celebrated his sixtieth birthday on August 21st last, and received on this occasion from his fellows, friends and pupils a *Festskrift*[2] containing thirty-eight scientific papers from their pens. Professor Hammar himself is responsible for ninety contributions to scientific literature, the earliest dating from the year 1885. The papers contributed to the *Festskrift* deal with medical subjects and histological research of all sorts, many of them relating investigations in disorders of the nervous system; they are written in Swedish, German, and English, covering over a thousand pages.

It is perhaps invidious to mention a few of these papers in view of their general excellence, for all afford evidence of careful observation and research. Dr. Kristenson gives a good account of a small epidemic of encephalitis lethargica observed in a Swedish regiment twelve months ago; such epidemics are said to be of frequent occurrence in Sweden, and to be in no way connected with or inhibited by epidemics of influenza. Dr. Wallgren has an interesting clinical study of tuberculosis of the bronchial glands in children; in the last resort he relies for diagnosis upon the results of *x*-ray examination, which may give positive evidence to be accepted as correct when the cutaneous tuberculin reaction has been negative repeatedly. Dr. Söderlund describes four cases of operation for acute cholecystitis occurring in the course of enteric epidemics in Gothenburg. The *B. typhosus* was recovered in pure culture from the bile in three of the patients, and in the fourth was mixed with *B. coli;* in one instance the cholecystitis followed the enteric fever, in three it occurred during the fever's course. Dr. Bergmark contributes a well-written account of the dissociation of sensation observed in three patients with lesions in the medulla and pons. Dr. Häggström, examining the two ovaries of a healthy woman aged 22, found in them over 400,000 follicles, of which 1,700 showed signs of further development, and 219 had gone on to the secretion of liquor folliculi. Nearly 1,000 of the ova contained two nuclei and were true twin ova; only five follicles containing two ova were found. The corpora lutea or their remains numbered 67, and 52 were in one ovary and 15 in the other; from which fact it may be argued that the follicles do not ripen in the two ovaries alternately.

[2] *Festskrift Tillägnad Professor J. Aug. Hammar*, På Hans 60-Ars Dag den 21 Augusti, 1921. Upsala: Almqvist & Wiksells, Boktryckeri-A.-B. 1921. (Med. 8vo.)

GASTRIC AND DUODENAL ULCERS.

DR. ROSENTHAL'S essay on the symptoms and treatment of gastric and duodenal ulcers[3] is based on his experience of 326 cases of ulcer found among over 3,500 patients with gastric symptoms seen at Budapest. Of the 326 patients 64 per cent. were males and five-sixths were over 30 years of age, while over 20 per cent. had had their ulcer for over ten years. Tables are given showing the frequency with which certain symptoms occurred in the various localizations of the ulcers, and the *x*-ray diagnosis of the condition is discussed at full length. The author argues in favour of the medicinal rather than the surgical treatment of gastric and duodenal ulcers; rest in bed, a modified Lenharz diet, and the administration of well-emulsified fat. He recommends the use of atropine, or its congeners, eumydrin and novatropin, given by the mouth or, in severe cases, hypodermically; these drugs act by lessening the tonus of the vagus nerve, reducing the secretion of hydrochloric acid and diminishing the spasm of the pylorus. He also advises the use of bismuth salts and of the aluminium preparations neutralon and escalin. The surgical treatment of these cases is discussed, but is said to give results in general less satisfactory than the medicinal treatment. The book, which is illustrated with a number of excellent skiagrams, should be of interest to physicians and surgeons alike.

SEROLOGICAL METHODS OF DIAGNOSIS.

MARC RUBINSTEIN'S *Traité pratique de Sérologie et de Sérodiagnostic*[4] is an up-to-date book describing laboratory methods employed in the diagnosis of disease. The first part contains a brief description of the properties of normal and immune serum. No new theory is expounded, but the author attempts to give the views of well-known workers in the field of immunity in a concise form.

The second part of the book describes in detailed fashion several different methods of performing the Wassermann test; it enlarges on methods employed in the serum diagnosis of gonorrhoea, tuberculosis, echinococcus disease, and cancer; and ends with a consideration of Abderhalden's reaction. In a practical treatise of this nature it would have been better to distinguish more clearly between those methods which are universally approved and those which are of doubtful reliability. For instance, whilst forty pages are devoted to Abderhalden's reaction, only two are spared for the practical application of agglutination. It is a singular omission that attention is not drawn to the pitfalls of inhibition zones in agglutination; nor is justice done to the accurate technique of agglutination evolved in the war. The treatise will prove useful to those engaged in laboratory diagnostic work as a reference book, for it contains descriptions of many serological tests not commonly practised in this country.

DISEASES OF THE EYE.

A BOOK that has reached its ninth edition may safely be said to be beyond criticism, and we have no hesitation in saying that DE SCHWEINITZ'S *Diseases of the Eye*[5] is one of the best handbooks in our language on its subject.

This edition has been reset, with the result that, although it forms a bulky volume, it does not look quite so bulky as the last edition. It is well printed in clear type on good paper, and is thoroughly up to date, for much new matter has been incorporated in the text. In the preface a paragraph, consisting of more than twenty lines, draws attention to subjects which now appear for the first time, many of them the results of the experience gained in the war, such as poisonous gas conjunctivitis; the localization of the cortical centres of vision, the work of Sir William Lister and Dr. Gordon Holmes; and the various plastic operations of epithelial inlay and outlay for remedying ectropion and contracted sockets. A valuable

[3] *Über die Symptomatologie und Therapie der Magen- und Duodenal-Geschwüre.* Von Dr. E. Rosenthal. Berlin: S. Karger. (Sup. roy. 8vo, pp. 72; 10 plates, 8 figures. M. 12.)

[4] *Traité pratique de Sérologie et de Sérodiagnostic.* Par M. Rubinstein. Paris: A. Maloine et Fils. 1921. (Med. 8vo, pp. 414; 22 figures. Fr.22; post free Fr.24.20.)

[5] *Diseases of the Eye.* A Handbook of Ophthalmic Practice for Students and Practitioners. By George E. de Schweinitz, M.D., LL.D.Pa. Ninth edition, reset. Philadelphia and London: W. B. Saunders Company. 1921. (Roy. 8vo, pp. 832; 415 figures, 7 plates. 50s. net.)

feature of the book is the copious index, which extends to fifty-eight pages.

The opening chapters on general optical principles, reflection and refraction, ophthalmoscopy and the theory of the ophthalmoscope, are so clear as to be intelligible to the most obtuse. The author rightly devotes considerable space to the examination of the patient and of the eye and of functional testing, for it cannot be too frequently emphasized that this is the basis of all good clinical work. For the rest, the chapters dealing with ocular diseases and operations are written on traditional lines and are excellent. The senior ophthalmic student who invests in this book will find his money well spent; the student of medicine in this country who is preparing for his pass examinations for qualification will, however, find all he wants in one of the cheaper students' handbooks; the cost of this work is undoubtedly high, but it is difficult to see how it could be brought out at any lower price, and the book is well worth the money.

THE ORIGIN OF MAN.

DR. CHURCHWARD'S fine and well-illustrated volume on the *Origin and Evolution of the Human Race*[6] is a monument of erudition and research, in which the author has collected a wealth of evidence in support of the thesis that human beings are descended from pigmies, who were in turn evolved from anthropoid apes in Africa more than a million years ago. The birthplace of humanity he locates more precisely in the Nile valley and around the lakes at the head of the Nile. Remnants of the pigmy race are still found scattered over the world; developmentally the pigmy was, the author believes, followed by the prognathous Masaba negro, the Masaba negro by nilotic negroes, these by the Masai of East Africa and allied tribes, the Masai by Stellar Cult peoples, these by Turanians, and the Turanians by the lunar, solar, and Christian cult peoples we know.

The origin of man is, of course, a highly contentious subject, and Dr. Churchward often finds himself in conflict with generally accepted or authoritatively expressed views on the matter. He writes with the sincerest conviction, and has a great deal of evidence to bring forward in support of his own novel and iconoclastic beliefs. The book must be regarded as a singularly bold attempt to solve the ultimate mystery of our ancestry; it is admirably illustrated and may be commended to the attention of the wide circle of general readers as well as to those interested in anthropology and ethnology.

MONOGRAPHS ON OBSTETRICS AND GYNAECOLOGY.

A SERIES of gynaecological and obstetrical monographs has recently been published in America by Appleton and Co., and a number of these have been received for review. Professor NEWELL, of Harvard University, writes on *Cesarean Section*,[7] an operation that is, in his opinion, performed with undue frequency, and, as a matter of emergency, often when it should be rather a method of election. Half the volume is devoted to the indications and contraindications for the operation, the rest of the book to the details of its performance. The author writes with clearness and with the competence of full knowledge, and his conservative but thoroughly sound views will be read by gynaecologists with no little interest. The book is well turned out and well illustrated, as, indeed, are the other volumes in the series before us.

The book on *Extrauterine Pregnancy*,[8] by Dr. SCHUMANN of Philadelphia, gives a full account of the history of that condition, its frequency, terminations, anatomy, pathology, and diagnosis; the final chapter deals briefly with its treatment. The author estimates that in Philadelphia during 1918 the ratio of ectopic pregnancies (there were 169 of them) to full-time intrauterine pregnancies was 1 to 267. The book should be of interest to pathologists and gynaecologists alike.

[6] *Origin and Evolution of the Human Race.* By A. Churchward, M.D., F.G.S., etc. London: G. Allen and Unwin, Ltd. 1921. (Roy. 8vo, pp. 525; 78 figures. 45s. net.)

[7] *Cesarean Section.* By F. S. Newell, A.B., M.D. (Roy. 8vo, pp. 222; 53 figures. 22s. 6d.)

[8] *Extrauterine Pregnancy.* By E. A. Schumann, M.D. Gynecological and Obstetrical Monographs. (Roy. 8vo, pp. 199; 69 figures. 22s. 6d.)

Dr. NORRIS of Pennsylvania draws attention in his book on *Gynecological and Obstetrical Tuberculosis*[9] to the frequency with which tuberculosis of the female genital tract and peritoneum occurs; the infection is but rarely acquired by coitus, but is usually effected by way of the blood stream, or else by direct extension from a neighbouring focus. The author discusses the pathology and diagnosis of the condition at full length, quoting numerous illustrative cases, and gives adequate accounts of the treatment required in the various lesions described; special chapters are allotted to the influence of tuberculosis on such functions as child-bearing and menstruation. The book is one for the gynaecologist.

Dr. NOVAK, of Johns Hopkins Hospital, contributes a volume on *Menstruation and its Disorders*,[10] in which he points out the great advances in the knowledge of the subject that have been made during the last two decades, and accepts as practically certain the corpus luteum theory of menstruation—namely, that an actively functioning mature corpus luteum is found just before the occurrence of menstruation and is its cause. The relation of menstruation to various systemic diseases is fully considered, and abundant space is given to treatment, apart from surgical treatment. Numerous references to the literature are given; Dr. Novak writes clearly and fully, and his excellent volume may be recommended to the attention of all medical practitioners who have to treat the disorders of menstruation, as well as to gynaecologists.

Professor POLAK'S *Pelvic Inflammations in Women*[11] provides the gynaecologist with a dogmatic and concise description of the diseases peculiar to women that result mainly from septic, gonorrhoeal, and tuberculous infections. The volume is particularly well illustrated, and treatment receives adequate consideration throughout it.

TREATMENT OF GOUT.

IN his book on gout and its treatment,[12] Dr. GUELPA develops a theory of the causation of the disease, and describes his dietetic method of treating it. He holds that gout is a polymorphic pathological state of the organism, and represents a reaction against the alkalinization and mineral poisoning of the tissues; it is not to be regarded as due to hyperacidity of the blood. In treating it the first principles are, according to the author, to reduce the quantity of foods containing alkali and mineral matters and to increase the acidity of the blood by a diet of meat and acid drinks. Dr. Guelpa begins his course of treatment by four days of fasting, with purgation by magnesium citrate or sodium sulphate; then follow five or six days of light diet excluding vegetables; then the patient has three days of a diet consisting of things like brain, liver, sweetbread, and kidneys. This course of three periods is repeated, with variations according to circumstances; damaged gouty joints meanwhile receive massage and movement. Mineral waters and all alcoholic drinks are forbidden, the patient drinking only water, *eau sucrée*, or lemonade. Dr. Guelpa quotes a number of illustrative cases in which his method proved successful. He gave an account of his method to the Royal Society of Medicine recently, and his book contains full details of his principles and practice; it may be recommended to the attention of medical practitioners who have cases of chronic gout to treat.

NOTES ON BOOKS.

THE thirty-second edition of *Burdett's Hospitals and Charities*[13] has recently been published. "Burdett" (as it is familiarly known throughout the hospital world) is a lasting memorial to Sir Henry Burdett, its founder and for many years its editor, who died last year. The first 150 pages deal with hospital finance, a topic of more urgent interest this year than at any previous

[9] *Gynecological and Obstetrical Tuberculosis.* By C. C. Norris. (Roy. 8vo, pp. 366. 22s. 6d.)

[10] *Menstruation and its Disorders.* By E. Novak, A.B., M.D., F.A.C.S. (Roy. 8vo, pp. 372; 39 figures. 22s. 6d. net.)

[11] *Pelvic Inflammations in Women.* By J. O. Polak, M.Sc., M.D., F.A.C.S. (Roy. 8vo, pp. 241; 89 figures. 22s. 6d.)

[12] *La Goutte et son Traitement.* Par Dr. G. Guelpa. Paris: F. Alcan.

[13] *Burdett's Hospitals and Charities, 1921.* Thirty-second year. London: The Scientific Press, Ltd. 1921. (Cr. 8vo, pp. 982. 17s. 6d. net.)

time. In this new edition certain alterations have been made in the form of the tables in the chapter on hospital expenditure, with the object of giving a true comparative analysis of expenditure under each of the different heads. Then follows the usual detailed directory of hospitals and other charitable institutions, occupying some 800 pages, and including not only British, but Dominion, Colonial, and certain American and other foreign hospitals. Full as the information given is, it would be more complete if the names of the staffs of the provincial hospitals were given, in addition to those of the London hospitals; in a publication of this kind the names of the physicians and surgeons at, say, the Royal Victoria Infirmary, Newcastle-on-Tyne, or the Manchester Royal Infirmary, are of as much interest as the name of the auditor or the original architect. The account given of the finance of some of the Colonial hospitals is interesting; in Australia large Government grants to hospitals evidently do not prevent control by an elected committee of subscribers, while in at least one large New Zealand hospital the entire income of £39,000 appears to come from contributions by patients, in spite of the fact that it is free to those who are unable to pay.

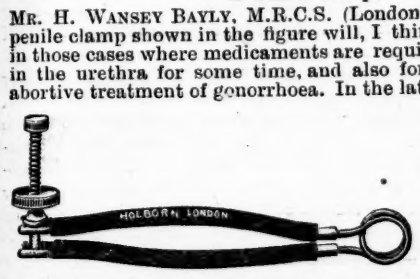
It is undoubtedly desirable that the average diabetic patient, having a chronic disease that can only be treated dietetically, should be taken fully into the confidence of his medical attendant and taught as far as possible to take care of himself. The American *Primer for Diabetic Patients*[14] by Dr. WILDER and two lady dietists of the Mayo Clinic attempts to do this; beginning with brief chapters on foods and urine testing, it gives an account of the diets and recipes suitable for different classes of diabetic patients. The book is well written and seems to fulfil very well the purpose for which it has been written. Many of the foods mentioned are American products and presumably to be obtained in other countries only with difficulty.

[14] *A Primer for Diabetic Patients.* By R. M. Wilder, Ph.D., Mary A. Foley and Daisy Ellithorpe. Philadelphia and London: W. B. Saunders Co. 1921. (Fcap. 8vo, pp. 75; 2 figures. 7s. 6d. net.)

APPLIANCES AND PREPARATIONS.

A Penile Clamp.

MR. H. WANSEY BAYLY, M.R.C.S. (London, W.), writes: The penile clamp shown in the figure will, I think, be found useful in those cases where medicaments are required to be retained in the urethra for some time, and also for the "sealing-in" abortive treatment of gonorrhoea. In the latter case, the clamp is loosely adjusted before the injection of the 20 to 30 minims of collosol argentum, and is firmly closed after injection. The meatal seal of collodium can now be applied at leisure, and the clamp should not be removed until after the seal has hardened. I have found the clamp satisfactory for use with any adolescent or adult male patient. Owing to the great variations in size of the penis in different individuals, the usual spring clamp is often useless. The "sealing-in" abortive treatment of gonorrhoea is so valuable in suitable early cases that any method tending to the simplification of the technique is of interest. The clamp has been made to my design by the Holborn Surgical Instrument Company.



A Rigid Binaural Stethoscope.

DR. VICTOR FELDMAN (London, N.) writes: This stethoscope is made up of three main parts, as shown in the illustration. The ear pieces are joined together by means of a ball and socket joint. Into the socket is screwed a metal tube, the length of which can be varied to suit the user's convenience. The chest piece, in its turn, is screwed to the end of the tube. Should we require a movable chest piece, a short length of stout pressure tubing (about 1½ in. long) is supplied, into which the adjacent ends of the tube and chest piece can be fitted, thus allowing lateral movement to the chest piece. The advantages claimed for this rigid stethoscope are: (1) It does away with rubber tubings. (2) Sounds are conducted better than in the ordinary stethoscope. (3) It can be taken to pieces and is therefore portable. The stethoscope is made by Messrs. Mayer and Phelps, of 59 to 61, New Cavendish Street, W.1.

THE HISTORY OF BRAIN SURGERY.

THOMAS VICARY LECTURE BY SIR CHARLES BALLANCE.

AT the Royal College of Surgeons of England on December 8th, before a distinguished gathering, with the President of the College (Sir ANTHONY BOWLBY) in the chair, the Thomas Vicary Lecture was delivered by Sir Charles A. Ballance, K.C.M.G., who took as his theme "A glimpse into the history of surgery of the brain."

Sir CHARLES BALLANCE said that the history of surgery of the brain was so wide that he would make no effort to touch its compass, but would merely, like an alpine traveller, salute a few of the peaks and pass on. When did brain surgery arise? He hesitated to dogmatize with regard to the surgical methods of prehistoric races, whose civilization, more or less complex, had perished with its records in the abysmal depths of geological time. He was anxious, in discussing the surgical knowledge which might have been attained by early man, to guard himself against the assumption that it was devoid of knowledge or skill. Surgery was the oldest branch of the healing art, for injuries must have been common events among our remote ancestors, and with the evolution of tribes into nations, one would think that some knowledge of injuries and skill in their treatment must have been acquired and handed down to succeeding generations.

Trephining in Early Times.

No written record had reached us, but the evidence of skulls showed that trephining was practised in prehistoric times. The late Professor Lucas-Championnière made a study of this subject, and in 1912 published an account of the skulls found in the burial grounds of the Incas of Peru and also in the caves and tumuli of various parts of France. His conclusion was that trephining was undertaken among prehistoric races as a remedial measure; and in the main recent therapeutic views justified the cranial therapy of the neolithic savage. It was certainly of surprising interest that, thousands of years before trephining was recognized as a part of scientific surgical practice, a decompression craniectomy was performed among peoples in many parts of the earth.

Early trephining was probably done for the relief of pains in the head, fits, insanity, the biblical disease known as "devil-possession," and fractures of the skull. The portions of skull removed, as he showed by specimens from the College museum, were of considerable size, and it was noteworthy that in very many cases the holes were made over the motor cortex. Lucas-Championnière had shown that the men of the Stone Age employed a very definite method of removing bone, and that they used saws in cutting. Multiple trephining was also performed by neolithic surgeons, and in this procedure they had not been without followers in later times. Guthrie, the great British surgeon, who went through all the battles of the Peninsular war with Wellington, had to set his face against the practice of multiple trephining, which before his time was common. The classic instance was that of Henry of Navarre (sixteenth century), who was thrown from his horse and sustained a fractured skull, and whose surgeon trephined him twenty-seven times. The undaunted Henry gave a certificate to his surgeon to this effect, and that he was quite well; and, as there were still some who doubted, he asked his best friends to supper and drank two or three of them to death! The lecturer showed some interesting examples of saws and other instruments used in surgery in the hinterland of Algeria at the present day. They had been lent to him by Captain Hilton Simpson, who had studied the hill tribes of that country, and had secured these instruments from the native surgeons.

From Hippocrates to Horsley.

Of ancient Mesopotamian surgery very little was known, although there must have been surgery in a fair degree of development in Babylon and Nineveh. Greek surgery was the earliest of which there was any definite record. The operation of trephining by the time of Hippocrates was done in an admirable way, not really to be bettered at the present time, and the method as practised by Hippocratic surgeons was probably in direct descent from the primitive methods of the Stone Age. Crete was a kind of half way house between the continents, and was probably the

starting point of European civilization. Unfortunately, no record existed of the surgery of the golden age of Crete or of Mycenae; no surgical abode had been dug out, although discoveries had been made of bodies bisected longitudinally, which suggested that anatomy was studied by means of frozen sections. Homeric surgery was chiefly descriptive of wounds. In the eighth book of the *Iliad* the horse of Nestor was wounded in the brain by an arrow shot from the bow of Paris, and it was related that in agony the horse sprang into the air and rolled round and round, causing confusion among the other horses of the team. The lecturer suggested that the horse of Nestor was wounded in the cerebellum, which in the horse was very large as compared with the cerebrum, and that it was the peculiarity of the cerebellar wound to cause this rotatory movement. Hippocrates was the father not only of medicine but of surgery, and whatever personal contributions he made to surgical knowledge, his greater task was to take in all that had been done before him, select the valuable from the worthless, and make surgery a science, independent of superstition and sophistry. His tradition was a priceless asset to the profession for all time. His knowledge of injuries to the head was extremely complete; in some cases he recommended operation in order to slacken the "tightness of the head," he also decompressed when there was inflammation or a foreign body inside the skull. Hippocrates recommended trephining as a cure for blindness when there was no evident disease of the eye; he also recommended operation for meningitis. His trephine had a collar or cross bolts to regulate the depth to which it could go.

The next great period was that of Celsus and Galen, the former of whom described the trephining operation, while Galen, so far as he knew, was the only experimental physiologist before Harvey. Then came the long ages during which men were content without surgical inquiry. Such learning as escaped the blight was preserved in the monasteries of Europe, mostly, so far as medicine was concerned, among the Benedictines. The slow re-creation of surgery was a fascinating study. To come down at once to very recent times, the lecturer said that when he was elected on the surgical staff of the National Hospital for the Paralysed and Epileptic, thirty years ago, the two great men with whom he came immediately into contact were Hughlings Jackson and David Ferrier. The former remained in his vision as the Socrates of neurology, and his papers were of extraordinary interest. Ferrier belonged to that small group of great men who rediscovered and re-created the science of experimental neurology, which had been lost to mankind since the time of Galen. It was difficult to realize (with Sir David Ferrier sitting immediately in front of him) that his first paper was published in 1873. Then there was Victor Horsley, who from 1884 to 1891 published eight papers of the greatest importance. Godlee was the first to remove, under modern conditions, a tumour of the brain, which he did in 1884, and by the end of 1886 Horsley had done ten such operations. Horsley had long and intimate acquaintance with operations on the brains of monkeys, and the lecturer believed that to this was largely attributable Horsley's success in brain surgery, and any slight success of his own was due to the same opportunity.

The Lesson of History.

What was the lesson to be gathered from the story of the surgery of the brain which he had so imperfectly sketched? In the gradual evolution of truth, at the end of each stage of the world's history, it would seem that a great man appeared who focussed the best thoughts of the preceding centuries or was the messenger of new knowledge. Carlyle, in speaking of the hero as poet, said that ten silent centuries found a voice in Dante, and he spoke of Dante "deep, fierce, as the central fire of the world; Shakespeare, wide, placid, far-seeing, as the sun, the upper light of the world." So it had been in surgery. Hippocrates, John Hunter, Lister—all marked epochs in the advancement of knowledge. There were lesser names bridging the gaps—Morgagni, for instance, between the famous anatomists of the Middle Ages and the great pathologists of the first half of the nineteenth century; and after Hunter there were Astley Cooper and Pierre Ouvrard (a French refugee in Russia), and others. John Hunter awoke in the minds of his pupils and later followers a desire to explore the old ground by the new experimental method and to discover truths long concealed. There was a spirit of adventure with Hunter and his school akin to that of the Elizabethan explorers. The torch which Hunter lighted was carried forward by Cooper and others, burning with a brighter flame. Galen and Harvey had been like Hunter in their enthusiasm for the experimental method, but neither of them left behind a great band of pupils and followers. In a volume which he himself had had to read as a student it was written that surgery had then reached its furthest limits. But in the fullness of time Lister, the peerless knight of surgery, the "upper light," the herald of the dawn of scientific surgery, arose and inspired a deeper insight into surgical thought and practice. In the fullness of time also came a man specially trained and of great ability and enthusiasm named Victor Horsley, and created a new department—that of neurological surgery—making what was before his time haphazard and dubious to rest upon the surest foundations in the practice of every surgical clinic. None of them had seen Hippocrates in the flesh, but his spirit ruled and energized their teaching and stimulated their clinical investigation. The wonderful character and spirit of Hippocrates, as Dr. Charles Singer had said, were more real and living now than ever they had been since the eclipse of the Greek scientific intellect. None of them had seen John Hunter in the flesh, but his spirit was very evident in the Hunterian Museum, and also in the genius for inquiry and experiment which he had elicited.

The Sacred Duty.

In conclusion the lecturer confessed to an uneasy feeling, shared by some of his friends, that during the last two or three decades the cult of the operator among some of the younger Fellows of the College had displaced in part the recognition of the sacred duty upon each one of them to lay one more stone on the building of surgical knowledge. They were all of them pilgrims of surgery who had only as yet reached the threshold of truth. A vast field of their art and science remained unmapped and unexplored. He trusted that succeeding generations of surgeons would devote time to research work. Research added such zest and satisfaction to life. There was no thrill like that which accompanied the first perception and the slow unfolding of some new truth or principle. Thus might they as surgeons rightly forge new weapons against disease and death.

Wisdom and yet more wisdom was their goal as they groped their way onward upon this bank and shoal of time, for was it not written, "She is more beautiful than the sun, and above all the order of the stars, and being compared to the light, she is found before it; she is the brightness of the everlasting light, the unspotted mirror of the power of God, and the image of His goodness."

LEAD POISONING AND THE INTERNATIONAL LABOUR CONFERENCE.

BY

PROFESSOR HENRY E. ARMSTRONG, D.Sc., F.R.S.

ONE of the decisions taken at the recent Geneva Conference (of which a note appeared in the BRITISH MEDICAL JOURNAL of December 3rd, p. 958) involves the early introduction of regulations protecting health in the painting trade. Undoubtedly, the dust produced by dry rubbing down is the chief risk, and if this be eliminated and careless work deprecated, there should be little, if any, objection to house-painting as an occupation. Lead poisoning is practically unknown amongst the painters in Scotland; probably their immunity is that which intelligence provides—the Scottish painters seem to be more careful workers than painters generally. Proof has been given, by a long series of practical trials carried out recently in Manchester and London, that it is not only possible but advantageous to rub down paint after wetting with water, then removing the débris with a wet sponge; in this way all dust is prevented. Several large firms in the painting trade have already adopted this method.

The Belgian and French inspectors asserted at Geneva that regulations are unworkable; probably they have a careless, if not unintelligent, class of worker to supervise. Apart from regulations, however, if it once be made really

clear to painters what they have to gain, if the public also be made aware of the one chief danger attending painting, an opinion will soon be established and a fashion set, so that official inspectorial interference will be unnecessary.

The risks from lead poisoning, which were formerly great in the white lead and pottery industries, it is well known, have been all but entirely abolished by the introduction of mechanical methods of removing dust and of wise regulations imposed upon employers and workers. The white lead bogey, however, still stalks among painters; in fact, the painter has only to consult his doctor for a pain in his stomach to be told, more often than not, that he is a victim of lead poisoning. There may, however, be other causes at work which are not always suspected.

Ten years ago two Departmental Committees of the English Home Office inquired into the risks attending the painter's occupation. I was one of those who gave evidence; it so happened that I had been working, on the action of hormones on living matter, in a direction which made my testimony of consequence.[1] The question at issue was the poisonous character of white lead paints. The assertion had been made that volatile compounds of lead were given off from paints.

By an exhaustive series of experiments Mr. C. A. Klein and I were able to prove that such was not the case.[2] The assertion was once more made in 1914 by M. Herman, a Belgian worker. Mr. Klein and I have recently repeated his experiments and have been able to demonstrate their fallacious character[3]—he had been misled owing to the presence of minute quantities of copper in filter paper; recently, at the Geneva Conference, the transcript of a statement by M. Herman was handed to us in which this observer admits that we are correct in our conclusion. The "volatile lead" bogey may now be regarded, we trust, as laid for ever. I may add that our conclusions have been confirmed by the Government chemist, Sir James Dobbie, to whom the matter was referred in 1913 by the Home Office Committee.

When first called into consultation in 1911 I was not conversant with the medical history of the subject. I was told that paint had a poisonous effect on animals, and it was suggested that a volatile lead compound was operative—this was before I had made specific experiments. I could only scoff at the suggestion as an entirely improbable explanation from a chemical standpoint. I pointed out that paint did not only contain white lead but also oil and turpentine, and that the oil underwent changes in drying. When told that basophilic granules had been observed in the blood cells of the animals exposed to paint and that this condition was an indication of lead poisoning, I suggested that the turpentine and perhaps also the vapour given off on drying might well be the cause of the phenomenon. The experiments were repeated and my forecast verified. At the meeting I had produced leaves poisoned by turpentine.

The effect is so striking, so easily demonstrated and so instructive, that I would urge every medical man to observe it for himself and reflect on its deep meaning.

All that is needed is to enclose a leaf of the ordinary spotted laurel (*Aucuba japonica*) in a wide-mouth bottle, such as a pickle bottle, together with a few drops of turpentine. After an interval, depending on the temperature, the leaf begins to darken and eventually becomes black; the action is rapid at blood heat. The turpentine vapour penetrates the leaf surface and produces a disturbance within the cells which determines the interaction of an enzyme with a glucoside, one of the products of change being a substance which blackens in the air. Equally striking is the result when an ordinary laurel leaf (*Prunus laurocerasus*) is used together with a strip of paper dipped in an alkaline solution of picric acid. The yellow paper soon becomes orange and eventually brick-red through the action of the hydrogen cyanide (prussic acid) liberated from the leaf, which gradually becomes brown. Chloroform produces the effect more rapidly.

In view of the frequency with which persons sleeping in newly painted rooms have been affected, and of the work done, especially by French observers, extending back into the earlier half of last century, it is more than remarkable that the influence of turpentine in paint has been so little considered by the medical profession and every disturbing symptom displayed by a painter attributed, of late years, to lead poisoning. The work done in America, Germany, and elsewhere, showing that volatile liquids generally have most deleterious effects on health, seems to be recognized only in narrow circles.

Mr. Klein and I in 1913 summarized the situation in the following terms:

"The toxic effects sometimes experienced from drying paints are to be ascribed to turpentine, and due allowance must be made for this in dealing with the hygienic phase of the problem. Our inquiry also shows that, in many cases, effects have been regarded as due to 'lead poisoning' which are attributable to other causes, especially to turpentine.

"The whole available evidence indicates that the dangers attending the use of lead compounds are only the well-known mechanical dangers.

"There is no foundation for the importation of a new element of danger into the consideration of the question of paints. Lead paints are to be objected to only on the ground that they may enter into the system through careless handling or in the form of dust such as is produced by rubbing down old paint."

We have again dealt with the subject in a recent paper read at the Royal Society of Arts,[3] and have stated our conclusions in the following paragraph:

"*In point of fact, all solvents of oil which can be used in paints and varnishes as thinners are lethal substances.* It is only seldom that painters compelled to work in confined spaces are overcome by their vapours; such cases must be regarded as abnormal, because they are, in fact, acute cases of poisoning, due to the high concentration of the vapours in the air breathed. In the ordinary practice of house painting the worker is exposed almost daily, during long periods, to air containing vapours at a low concentration; under such conditions, owing to the slow nature of the attack, the effects are frequently overlooked, though deep-seated changes may be in progress, the extent of which, even to-day, is not fully appreciated."

At Geneva, the question "Is medical science, generally speaking, in a position properly to diagnose lead poisoning?" was referred to a medical subcommittee composed of Dr. Desiré Glibert (Belgium), Dr. Frey (Germany), Geheim Hofrat Professor K. B. Lehmann (Germany), Professor Curschmann (Germany), Dr. T. M. Legge (Great Britain), Professor Loriga (Italy), Dr. José Gonzalez y Castro (Spain), Sir Kenneth Goadby, K.B.E. (Great Britain).

This Committee reported unanimously that:

"Medical science has been able for a long time to diagnose satisfactorily typical and severe cases of saturnism.

"Modern methods of diagnosis in the hands of specially trained medical men enable them:

"(1) To recognize saturnism in most doubtful cases.

"(2) To exclude cases of alleged saturnism.

"(3) To recognize lead absorption and lead intoxication at an earlier stage than heretofore."

This report told us only that *specially trained* medical men—in other words, the certifying doctors—could diagnose saturnism; of these, I believe, there are not a dozen in the country. Sir Thomas Oliver, one of the few lead experts, in his recent special address to the British Medical Association at Newcastle-upon-Tyne, mentioned cases within his knowledge in which death certified as due to lead poisoning was proved by *post-mortem* examination to be due to malignant disease of the intestine. We had with us at Geneva a master painter from Manchester, who told the Committee that his medical advisers long insisted that he was suffering from lead poisoning, although he assured them that he had not been in contact with paint for years; when ultimately he was operated upon he was found to be suffering from gall stone. For some unexplained reason my attempt in the committee to discuss the influence of turpentine was objected to especially by M. Glibert, the Belgian factory inspector and medical man.

When it was proposed to refer the following questions to the Medical Subcommittee—

1. What is the degree of risk of lead poisoning attaching to the painting industry, according to statistics?
2. What are the channels by which lead penetrates most frequently into the organism of the body?—

the further proposal was made to add:

Amongst painters' diseases attributed to white lead, should any proportion properly be attributed to any other cause than white lead?

This was defeated, and consequently my attempt to bring the question of volatile thinners under proper discussion was thwarted. Such are the methods of conferences; the scientific treatment of a subject appears to be barred.

The report of the Medical Subcommittee was:

"That, in so far as concerns painters using white lead or other lead compound, saturnism is the chief professional risk, but that the statistics are vitiated:

"1. As to mortality—(*a*) primarily, by the exclusion of cases of death due to saturnism which are grouped under other

headings; (*b*) secondarily, by the inclusion under saturnism of cases of death due to other causes.

"2. As to morbidity, by defects in notification and certification and by other imperfections."

As to the second question the Committee reported that:

"By far the most important danger is from dust which enters through the nose and mouth."

Of late years I have given much further attention to the effect of chemically neutral substances, anaesthetics and antiseptics, on living tissues. Their penetrating power and their power of exciting disturbances within the normal cell is astounding. My considered opinion is that the medical profession has yet to appreciate the insidious and often deep-seated effects that may be produced by repeated and continued exposure even to small amounts of vapours such as that of turpentine. Painters are known to be subject to sicknesses from which lead workers are as a rule free—such as kidney complaints and hardening of the arteries. It will be necessary to take careful note of the influence of such exposure in any future attempts to diagnose the symptoms and assess the danger arising from the use of lead paints.

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ST. BRENDA'S PRIVATE HOSPITAL, BRISTOL:

A HOSPITAL FOR PAYING PATIENTS.

BY

STUART V. STOCK, M.B., B.S., F.R.C.S.,

REGISTRAR.

IN the issue of the BRITISH MEDICAL JOURNAL for February 21st, 1920, Mr. William Billington published an article on the St. Chad's Private Hospital, Birmingham, and on July 16th, 1921, a discussion was opened at the Royal Society of Medicine by Sir Thomas Horder on the private clinic system. The following account of a private hospital which has been started in Bristol under the group system, and which is intended for patients of limited means, may therefore be of interest at the present juncture.

In Bristol, as in Birmingham, there was no provision for that large number of patients who were unable to afford the heavy expenses incident to an operation in a private nursing home, and who yet were not of the class for whom the voluntary hospitals are primarily intended—a state of affairs which is bound to lead to hospital abuse. It was felt, therefore, that a non-charitable, self-supporting institution, like that in Birmingham, which would take these patients at fees well within their means and give them all the advantages of the up-to-date modern hospital, would be a great boon, not only to the patients themselves but, it was hoped, also to their family doctors.

In drawing up the lines on which the hospital should be run there were obviously two schemes to be considered—one in which the institution should be run on the lines of St. Chad's; the other, in which it should be run in the same way as a modern general hospital, with its own staff and a fixed scale of fees. After a good deal of deliberation the second alternative was decided upon, and it was further laid down as a fundamental principle that no patient should be admitted without a note of recommendation from his own doctor.

Finance.

It was decided that no financial assistance should be sought from the general public, so that the staff, and the staff alone, would have the management, thus eliminating the danger of lay control with its desire for financial success and temptation to advertise, which would surely follow, as pointed out by Mr. Bishop Harman.

The fees to be charged were next decided. With these as a basis, it was resolved to start with 40 beds. Careful calculation and inquiry showed that, with 40 beds and the low fees, the hospital must be run on the small ward system, as separate rooms would mean too high fees for the restricted incomes of the patients to be catered for. Having arrived at this point, the number of the staff was decided upon as follows: Two surgeons, two physicians, a gynaecologist, an ophthalmic surgeon, a dermatologist, a surgeon in charge of the ear, nose, and throat department, two anaesthetists, a skiagraphist, and a bacteriologist, all of whom are on the junior staff of either the Bristol Royal Infirmary or the Bristol General Hospital and the Clinical Board of the University of Bristol.

Legal advice was then sought, and the twelve members of the staff formed themselves into a limited liability company. The company has issued ordinary and preference shares, all of which are at present held by the staff.

This is the present constitution of St. Brenda's, but it is meant to be only a temporary phase. The number of beds we could afford to open was limited, thus limiting the staff. This limited staff, on the advice of the lawyers, became a limited liability company. But the intention is not to rest here. As the hospital grows, and we have experience enough to show that it will grow, the staff is to be enlarged. It is hoped that when debentures have been paid off the constitution will be altered to take in the bulk of the junior staffs of the Bristol hospitals.

Premises.

The question of premises was one of the greatest difficulties the staff had to face. Building, at present prices, was out of the question, so, after a considerable amount of trouble, two large semi-detached dwelling houses in Clifton Park, close to the Clifton Downs, were secured and thrown together, and converted into a hospital on the small ward system. The majority of the wards contain three or four beds. There are two floors available for wards. The ground floor contains the surgical beds, the theatre and *x*-ray installation, and the second floor the labour ward, nursery, medical wards, and day rooms for men and women. This provides accommodation for forty beds. The pathological department and the dark rooms are in the basement. The rooms are lofty and well ventilated, and central heating has been installed.

The hospital is run on the lines of an ordinary general hospital. A great feature is "team work," and patients are more thoroughly overhauled than is usual in a general hospital. Very close touch is kept with the general practitioner who sends the case in. He is given a preliminary report on his case, and, if necessary, an intermediate one. On the discharge of the patient he receives a full account of the progress, treatment, and suggestions for further treatment. In any case of difficulty he is called in to the consultation, and is always warned as to the time of operation in a surgical case. Careful records of each patient are kept by the registrar.

The fees are 3 guineas a week for maintenance, 1½ guineas for professional attendance, and from 2 to 10 guineas for operations, according to their severity, and from 1 to 3 guineas for special investigations, such as *x* rays. No charge is made for routine clinical pathology, drugs, or dressings.

The hospital has been opened six months, and it has been found that the system works admirably. A factor which is greatly appreciated by the general practitioner and the patient is that the cost of treatment, investigation, or operation is known beforehand, as there are no extras whatever.

THE Swedish Parliament has allotted 6,000 kronen for the establishment of an institute for racial biology at Upsala, under the direction of Professor Lundborg.

The *Gazette Hebdomadaire* states that there are 22,990 medical practitioners in France and its colonies, of whom 5,415 reside in Paris.

THE London County Council is urging the Government to take steps to introduce legislation to give permanent effect to emergency measures passed during the war to permit a reduction in the number of jurors on coroners' inquests and to allow a jury to be dispensed with altogether in certain cases. In three districts, out of 152 inquests, 140 were held without a jury, with no complaint and with a great saving of expenditure.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

THE SPARE PART PROBLEM.

RECENT correspondence in these columns has revealed that a number of medical men resident in various parts of the country have a common experience in discovering that it is next to impossible to obtain deliveries of spare parts for their motor cars; while others complain of the unreasonable delays of procedure. Some of these correspondents appear to imagine that I have not touched on the subject. That must be due to a lapse of memory on their part, in that it is one of the problems that has been referred to by me frequently in these columns since the Armistice. More than once stress has been laid on the fact that the choice of a car for a medical man should be governed largely by investigation as to the probability of spare parts being available promptly as and when they shall be needed. This had to be touched on, for example, at the time that changes of models, liquidations of companies, difficulties in regard to labour problems, and so forth, were discussed. As it appears, however, that the urgency of the matter has not been sufficiently appreciated by many of those concerned, it may be of service to draw attention to the fact that the medical man's choice of motor vehicles is necessarily and always very much narrower than that of the general public. On the one hand, the medical man cannot afford to indulge in experiments, because his car is needed to be ready to take him anywhere at any time all the year round; whereas the average member of the public can motor more or less at his option. In practice, this means that, whereas the average member of the public can try an entirely new type model if it embodies points that appeal to him, the medical man cannot take such a risk, because it is a long established fact that even the biggest firms have to give a new type at least twelve months' run in the hands of the public before they can discover all the things that are likely to go wrong with it in charge of the general user, as distinct from those points that are revealed when the experimental and earlier examples of the given type are put through all manner of tests in the hands of their staffs, although many of the tests represent even more deliberate abuse than cars receive occasionally at the hands of some owners or their paid drivers. It is only after a car type has been on the market twelve months that medical men are justified in buying it, provided the result of such test is that the model has proved itself to be a suitable one. But that is not the only ground on which the medical man's choice is necessarily restricted. A factor that operates to a greater extent in most cases concerns the obtaining of spare parts. Under normal conditions this problem will be present always. In the current abnormal conditions it is in evidence to a greater extent than ever before.

REPLACEMENTS FOR OLD MODELS.

We may therefore take the three main examples which the medical man should have in mind:

Sometimes where a medical man knows the person who has owned a certain car he can economize capital outlay by buying it at secondhand, because he has personal knowledge that it has never been abused. In no other circumstances should a used car be acquired by a medical man. Such machines do not carry the maker's guarantee against the failure of parts, and so on. In exceptional cases where it is apparent that, as a mere capital outlay, the individual medical man will be doing well to acquire a particular car, in that he cannot obtain any new one to give corresponding service for anything like the same sum of money, nevertheless before making his final decision he should ask himself how old the particular model is, and take steps, not merely to discover how the nearest local authorized agent of the given make of car is situated in regard to stocks of spare parts, but also what is the position of the manufacturer behind the agent. Some 2,000 parts go to the construction of the average motor car. Few builders who have established their reputations over a period of years and who are therefore of the class most likely to serve medical men well, have put through fewer than twenty satisfactory standard models in the course of their enterprise. It will therefore be appreciated that it is as well a financial as a physical impossibility to carry for an indefinite period a stock of spare parts for all types. To deal with the problem some manufacturers, such as Rover, have removed the jigs, patterns, dies, and other necessaries for producing the parts of old models and have set up entirely separate establishments, sometimes a hundred miles away from the factory, where there is installed the necessary machinery for making such parts to order. But in these days of excessive taxation and ever-increasing financial stringency obviously it is impossible for any manufacturer who does not chance to have had a lot of spare parts left over before the war—and that case would indicate that his car had not been very much of a success—to have on hand in these days of high costs of material and labour, and on falling markets, a big post-war production of spare parts for obsolete models. Where a car is of a model which was abandoned at the time war broke out most of the spare parts needed nowadays have to be made to order, and that takes time. In this connexion I would mention that the medical man derives one incidental advantage from circumstances over which, it chances, no one has any control: as the price of materials and wages is coming down, such parts are likely to be made cheaper and more cheaply as time goes on. But, more important than getting a few shillings off a spare part, is the question of the medical man getting it promptly. It is because we cannot rule out the time factor in this connexion, and because, in any case, spare parts which have to be made to order cost much more than those which go through in series, that the medical man should be chary of acquiring out-of-date models, although the initial cost is often very tempting. Of course there are certain parts of the vast numbers that go to the assembling of a car which are sometimes carried in stock for out-of-date models because the books of the given firm tell them at what periods such parts are due to be worn out; therefore, from the numbers of cars that have been sold, they have a very clear idea of what will be the demand for such parts and when it will arise. But many parts need replacement merely because an accident has occurred. Ten to one such parts will not be stocked, because they are not portions that wear out in the normal course of motoring.

SUPPLIES FOR FOREIGN BUILT CARS.

The second point concerns foreign built cars. Both in the pre-war and the post-war period it has been pointed out many a time that cars, particularly of American makes, are sold by firms registered here each with a limited capital liability of not more than £10,000; yet each of such concerns will sell in a year goods exceeding £250,000 and some of them £1,000,000 in value, every one of the cars disposed of having the maker's full guarantee. Plainly, if anything went wrong with the model the guarantee would not be worth the paper on which it is given, because there is £10,000 capital only behind a quarter of a million pounds, or a million pounds liability, as the case may be. The business in America was built up largely on the principle that service must be given in a manner which, certainly in the pre-war days, was not understood by European manufacturers. While all was going well, of course, the benefit of such service was very plain to the owner. But when things go ill, as they have done in the majority of cases since the war, an entirely different situation obtains. It is for this reason that many American service schemes have broken down in this country. But one must be explicit in this connexion and point out that there have been exceptions in the American industry, some of the firms represented in this country having continued to enjoy successful trading here and being determined to lay their plans for further development of their schemes this year. Hence the exceptional factors concerned are able to continue to give effective service. Likewise, in regard to the Continental industry, there are in France, for example, certain firms which are able to give supplies of spares promptly. But the French motor industry in general is in a very bad case, much worse than our own, in that some of the oldest established French firms have even ceased to be. This topsy-turvy situation obtains in all motor building countries. One has always to recognize the existence of this unknown factor. In addition, the financial status of the authorized

agent through whom any builder or chief concessionaire sells a car to an individual customer situated outside the metropolis will largely govern the facilities given or withheld in regard to obtaining spare parts. Sometimes even in the case of a manufacturer whose business has been reconstructed the new interests decline to have anything to do with the production or marketing of spare parts for obsolete models after stocks have been exhausted, because that part of the business does not pay. In short, this problem is aggravated owing to the extraordinary state of affairs to which the world's industry is subjected as the result of the war. But though the medical man is powerless to control manufacturing conditions, nevertheless he has a certain local radius of vision, as represented, for example, by his inquiries satisfying him as to whether the authorized agents of the car are financially sound. Some agents continue business for months and even years after manufacturers can give them credit no longer, which means necessarily that their customers will suffer occasionally in regard to service, apart altogether from factory problems.

POST-WAR BRITISH SERVICE SCHEMES.

Lastly, we come to the question of home-built machines. Here much the same circumstances govern the manufacturer. The medical man should be informed that the people in charge of practically all the world's motor manufacturing and selling enterprises are not those who appear nominally to be so; but financiers. In nine cases out of ten such folk do not concern themselves with future prospects, but concentrate all their attention on the problems of the moment. In that connexion often the business of spare parts has to be proportionately neglected because the financiers can see at a glance that the prices of labour and raw materials are falling; therefore it is inadvisable to produce parts at current prices to go into stock for an indefinite period, in that the prime aim in endeavouring to negotiate difficult financial times in manufacturing enterprise must be to devote all attention to the production of that which will be liquid and realizable in the minimum time. Happily, on the whole, the outlook at home is not so gloomy as one might imagine on considering these points. For example, such an enterprise as the Vickers concern, the Wolseley Company, has organized a service system which is more complete than any contemplated by Americans in this country. Briefly, the principle is that thirty centres have been established in various parts of these islands, at each of which complete stocks of spare parts of all post-war models are carried, including parts that could not wear out, but which might be damaged by collisions and so forth. Thus the problem of a part needed for replacement through an accident, as distinct from normal wear, can be dealt with right away. It will be appreciated that, by choosing no fewer than thirty centres in such a relatively small area as these islands, it is possible for a customer at any one point to be within at most a 30 miles radius of a source of supply. Again, the question as to whether supplies can be had through a particular local agent from any one of the centres so established is solely a point of the local agent's financial condition at the given time, in that no builder can afford to supply through an agent who is financially unsound. The medical man, however, could easily obtain the name of the nearest of the thirty dépôts and deal with it direct in such circumstances. I have instanced what, as far as I am aware, is the most notable illustration of a British firm establishing a complete service scheme; but I wish to make it understood clearly that a number of British manufacturers are working on similar lines, and that gradually the problem of spare parts will be solved. Moreover, through many of these services out-dated models will also be able to be kept in use.

DEPOSITS SHOULD NOT BE MADE.

So much for the governing circumstances and the various situations which evidently need bringing to the notice of medical men as matter for practical consideration when they are choosing cars. In regard to those who have vehicles already, some will come into conflict with one or other of the particular governing circumstances I have illustrated, and over which one can exercise no control. But medical men must have the use of their cars by hook or by crook. One correspondent writes: "Most firms intimate that spare part delay can be avoided by leaving with them a credit deposit—of uncertain amount." No such policy should be encouraged by any medical man. It is beyond the power of mortals to foretell what will be the financial condition of any firm in the future. If one went wrong the money so deposited would probably be lost to the medical man who advanced it. The greatest concession any medical man should make in the matter of expediting business is to send cash with his order. But even that should not be done unless he is at least certain that the business of the manufacturer in question is in operation when he sends his order. Cash on delivery is about all that ought to be asked. Of course, the matter is complicated by a number of manufacturers having to change their agents no less in the interests of the public than of themselves. The problem is certainly the most vexed of all those that concern medical motor users at the moment. Yet it is one with which it is practically impossible for the Society of Motor Manufacturers and Traders to deal because they could not possibly guarantee the financial status of any member. Neither would any form of agreement render it possible to deal with what are the vicissitudes of conducting commercial enterprise. One does see, however, that the Society of Motor Manufacturers and Traders could at least do something in the matter of urging its members to speed up facilities for spare parts and to have a standard procedure by which, for example, each would always acknowledge promptly an order for a spare part whether he could supply it or not. Fortunately for the credit of the industry and the trade, despite the abnormal circumstances through which we are passing, such experiences as are rightly complained of are the exception rather than the rule. Moreover, I believe it is reasonable to entertain the hope that complaints under this head will tend to be fewer from now onwards. For one thing, the management of local garages is largely passing into the hands of businesslike men. We are not yet at the end of weeding out unsatisfactory agents, but the process is proceeding apace. In connexion with the whole matter, too, some injustice is being done unwittingly in the general confusion. For example, if an owner of a British car cannot obtain spare parts, ten to one he tells all and sundry who will listen to him that no British manufacturer organizes his business properly. The same sort of thing obtains in the case of an owner who has been disappointed about an American car, a French one, and so on.

THE JUST VIEW.

The truth is that one can cite good and bad examples when dealing with cars of any country of origin. By generalizing instead of specifying the individual motorists may do an injury to those very businesses, whether they are of British or foreign origin, which it is desirable to encourage, because they happen to be conducted on the right lines. Every complainant should be most scrupulous to cite the particular make of car and agent in question whenever he is justly spreading his grievances abroad. In no circumstances should sweeping assertions be made, because examples, alike of satisfactory and of unsatisfactory service, could be cited in the case of members of the motor industry or trade of any country. For example, it was the fashion before the war to cite the Americans as the only folk who could give really satisfactory service, and to condemn all others, including the members of the Continental and home trades, by comparison. The fact is that to-day more American firms doing business in this country could be censured under this head than foreign or British ones. That does not mean that it would be fair to condemn all traders in American cars. Than that nothing could be more unjust.

In regard to the Ansaldo car, of which brief mention was made in these columns recently, Messrs. Watkins and Doncaster, Ltd., of Great Portland Street, inform us that the back axle drive is by straight bevel gear, and that detachable wooden wheels are standardized.

IT is reported that during the year 1920, deaths resulting from accidents caused by automobiles and other motor vehicles (excluding motor cycles) recorded within the death registration area of the United States (an area which contains 82 per cent. of the total population), numbered 9,106. This represents a death rate of 10.4 per 100,000 of the population.

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THE MEDICAL HISTORY OF THE WAR.

THE publication of the official *History of the Great War* has been eagerly anticipated, and the first volume of the medical series,[1] now available, will whet the appetite for the succeeding issues which are planned to cover the whole field. The complete series will consist of twelve volumes: General History of the Medical Services (four volumes); Diseases of the War and the Medical Aspect of Aviation and Gas Warfare (two volumes); Surgery of the War (two volumes); Hygiene of the War (two volumes); Pathology and Medical Research during the War (one volume); Medical Statistics and Epidemiology of the War (one volume). We hope that from all this mass of material valuable lessons will be drawn for future guidance. The Editor-in-Chief, Major-General Sir William Macpherson, has secured the assistance of a large number of writers whose special knowledge of particular subjects is made available for the information of all.

The volume now issued deals with organization and administration in the United Kingdom, and also with the operations against Tsingtau, Togoland, the Cameroons, and South-West Africa. In no previous campaign in which the British armies have taken part has any concerted attempt been made from the beginning to preserve and publish an adequate description of the medical problems involved, and it is fortunate that this lack of knowledge as to what has taken place in the past was so soon recognized in the great war, and that, owing largely to the action of Professor Adami and Sir William Osler, provision was early made to meet it. Lieut.-Colonel F. S. Brereton was appointed in 1915 to commence the gigantic task of disinterring and collating information from the innumerable war diaries kept by each medical unit which otherwise would have been buried in a mass of files that the most courageous reviewer would have hesitated to wade through. The Editor-in-Chief in his introduction also pays tribute to the value of the services rendered by the Medical Research Council through its Secretary, Sir Walter Fletcher, who placed at the disposal of the War Office the statistical machinery which ultimately became invaluable in elucidating the mass of figures as to casualties, incidence of disease, and so forth. It was quickly recognized that such a war as this would produce an invaluable collection of pathological specimens, and here again the Medical Research Council, with the foresight which characterizes so much of its work, stepped into the breach, and by the appointment of Professor T. R. Elliott, F.R.S., at the Boulogne base, formed a collecting centre which preserved a unique collection of specimens, both medical and surgical.

The task which was laid upon the Army Medical Service was one the magnitude of which the most careful prevision could hardly have foreseen. An army of three and a half million had ultimately to be provided for, and a personnel, highly trained but wofully inadequate in numbers, had to be expanded to deal with the problem of the sick in such an army. The preparatory steps are lucidly traced by Sir William Macpherson, who sketches the development of the R.A.M.C. as a corps, and indicates the way in which it was made possible to expand this nucleus until it finally embraced over a half of the medical men and women in this country. As he says himself, it is "the magnificent and harmonious co-operation afforded by the medical profession throughout the empire, and by a host of voluntary and other helpers in the work of the Army Medical Service and the Royal Army Medical Corps that was the most prominent feature of the war."

Statistics are now not altogether convincing weapons. Suffice it to say that the beds in military hospitals at the outbreak of war numbered 7,000, and at the Armistice had risen to the gigantic total of 637,746 fully equipped beds; 75 hospital ships or medical transports were put into commission; 770 separate units were mobilized; and finally 2,655,025 cases, either battle casualties or invalids from sickness, were transferred to the United Kingdom. Reading once more the story of the early efforts made in 1914, the mind travels back to the hustling and urgent methods which were perforce in vogue to allow of the necessary rapid expansion of the Royal Army Medical Corps. Two features stand out prominently: medical administration had elaborated the ideas on which the work proceeded; and, in most respects, that which followed had, in its general outlines, been foreseen. It was a stroke of genius which contemplated the enlistment of voluntary aid, and had made a partial commencement in the training of Voluntary Aid Detachments, which subsequently were an invaluable source of recruiting for the nursing and medical services. The nucleus provided—often with a certain amount of derision at the likelihood of its ever being required—obtained recognition of its extreme value with a rapidity which rarely occurs, and as succeeding volumes unfold the story we shall doubtless recognize more and more the value of this agency. It is interesting to note that it was in 1914 that the establishment of nursing dépôts first appeared in the official tables of war establishments. Had this method of dealing with the convalescent sick and wounded been recognized still earlier, and made a more prominent feature of medical administration, its value would have been far greater, for there was no medical measure throughout the whole war which did more to check wastage and maintain man power than the expansion of the convalescent system of handling casualties. Should war ever occur again, and the British armies take the field, the provision of convalescent beds in the proportion of two to every hospital bed would probably be recognized to be a matter of very early importance.

Another interesting point to trace and one on which columns could be written was the method of transport. From the first railway ambulances, improvised largely from derelict French rolling stock, there evolved a fleet of ambulance trains fitted with every possible convenience for minimizing the suffering of travelling. The introduction of motor transport also revolutionized the handling of casualties in the field, and the story of the motor ambulance convoys is one of absorbing interest.

One of the great lessons to which attention should be drawn in this preliminary survey is the development of the preventive sanitary service. The con-

[1] *History of the Great War based on Official Documents.* Medical Services General History. Vol. I: Medical Services in the United Kingdom; in British Garrisons Overseas; and during Operations against Tsingtau, in Togoland, the Cameroons, and South-West Africa. By Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D. London: H.M. Stationery Office, Imperial House, Kingsway, W.C.2. 1921. (Med. 8vo, pp. xv + 463; illustrated. £1 1s. net.)

tinuous, little advertised, and often monotonous and arduous work which the sanitary sections carried out was undoubtedly one of the most valuable factors in preventing epidemic disease, and when statistics are prepared the incidence of acute disease will indicate the remarkable achievement in preventive medicine of the Royal Army Medical Corps, which with its sister services had expanded at home and abroad to include half the medical profession in Great Britain and the British Empire. Another matter which will be of interest to the civilians who served in some medical capacity in the war is the tracing of the part played by the consultants and the specialists; the co-ordinating and instructional work which the former carried out, and the handling of casualties by those specially qualified to deal with particular diseases or injuries which the appointment of specialists made possible, marked an advance in administration which was ultimately copied in the allied armies. Enough has been said to indicate the interest which this first volume will create. We hope in subsequent issues to discuss some of the many matters of detail it raises.

THE IMPERIAL CANCER RESEARCH FUND.

OWING to the more pressing problems of the war, the work of the Imperial Cancer Research Fund was practically suspended for the period, and the recent publication of the seventh annual report marks the resumption of its activities. Of the seven papers constituting the report, four have already appeared in print in other periodicals from 1918 onwards, and may therefore be dealt with briefly.

The first paper, by Dr. W. Cramer, is an account of a series of experiments on the effect of sodium and calcium ions on the growth of a transplantable mouse carcinoma. By suspending tumour emulsions in isosmotic solutions of sodium chloride and calcium chloride he found on transplantation of the cells so treated that there was a distinct though temporary inhibition of growth with the latter: the calcium chloride abstracted some of the water from the cells, but this loss could be neutralized by subsequent treatment with the sodium chloride solution. It is believed that this inhibition and the subsequent recovery afford an explanation of the spontaneous fluctuations often exhibited by tumour cells in the course of their propagation. Dr. A. H. Drew contributes a suggestive paper on the comparative oxygen avidity of normal and malignant cells. Comparable quantities of living normal mouse tissues and mouse cancer cells were incubated in long test tubes of Locke's solution containing methylene blue in weak concentration. The rate of decolorization of the fluid starting from the bottom of the tubes was measured, and it was found that in the case of normal tissues the decolorization proceeded rapidly for the first hour, then slowed down markedly, and ceased after the fourth hour, whilst in the case of the malignant tissues there was no appreciable decolorization for the first hour or two, a slight amount in the fourth or fifth hour, and then a cessation, after which time the cells were dead. The explanation given is that the tumour cells have a much lower oxygen avidity than the normal, and that whatever oxygen they require is obtained from that dissolved in the solution. This explanation, however, is rendered doubtful by the findings in a subsequent paper in the same report. Dr. Drew states that further investigations were in progress to determine whether the reaction could be used to distinguish neoplastic from other proliferations, or benign from malignant tumours. As this paper first appeared in April, 1920, the further communication giving the results of such a practical application will be awaited with interest. Two other papers by Drs. Russell, Gye, and Woglom, on the oxygen consumption and respiratory exchange of mouse tissues, normal and neoplastic, are concerned mainly with the technical difficulties of a difficult problem, which have been partially overcome, but which allow only of cautious and tentative conclusions. So far as they go they seem to indicate that the quicker the rate of growth and the more highly differentiated the tumour is, the greater the oxygen consumption, and further, that the more rapidly growing undifferentiated tumours draw their energy from carbohydrates while the more slowly growing tumours obtain it from fats.

Dr. C. da Fano contributes a long and well illustrated paper on the Golgi apparatus of transplantable tumour cells. An account is given of the technique required for the demonstration of this somewhat obscure cytological structure, and the literature on the subject is thoughtfully reviewed. Dr. da Fano finds that apart from the fact that Golgi's apparatus was a constant feature of the undegenerated cells of all tumours examined, it showed a characteristic aspect in almost each of them, whilst there was a similarity of structure and situation between the Golgi apparatus of tumour cells and that of normal tissue elements. By way of reply to the contention of some sceptics who have doubted the applicability of the findings in the study of mouse cancers to the investigation of malignant disease as it affects the human being, Dr. J. A. Murray collects a few cases illustrating "lymphatic dissemination" in spontaneous and transplanted tumours in mice. He admits that the number of these lymphatic gland metastases is small, and he attributes this to the fact that a certain length of time is necessary before metastases occur, and that in the case of the rapidly growing tumours death occurs before metastatic nodules appear visible to the naked eye. In the few instances he cites of lymph gland metastases the proof that these arise by lymphatic rather than by vascular dissemination is not very strong; and the frank admission that the frequent involvement of lymphatic channels so characteristic of human carcinomata, as well as some other features, are not paralleled in the case of mouse tumours would not seem to us seriously to detract from the value of the results obtained from the study of mouse cancers.

Probably the most important paper in the present report, and one that will attract more general attention, is the brief account given by Drs. Murray and Woglom of their experiments dealing with tar cancer in mice. The authors refer shortly to the work of their predecessors in this interesting development of cancer research. Though the close relationship between tar and other similar substances to the production of warts and epitheliomata has long been recognized, mainly owing to the investigations of Dr. T. M. Legge of the Home Office in the industries concerned, yet the numerous attempts at experimental verification of this relationship between cause and effect have failed, probably because the experiments were not continued long enough. The first success was obtained by the Japanese workers, Yamagiwa and Ichikawa, a few years ago. By long-continued application of coal tar to the ears of rabbits they induced papillomata and epitheliomata, the latter in a few cases giving metastases in the regional lymph glands. Though it is difficult to be certain of the percentage of cases that were definitely malignant, yet the work of these pathologists is of supreme

importance, not only because they opened up a new field in cancer investigation, but because they taught us the value of patient persistence necessary to successful results with any suspected cancer-producing agent. No criticism can detract from that. Following them, in 1919, another Japanese worker, Tsutsui, found that tumours were easily induced by applying tar to the back in laboratory mice.

These pioneer communications contributed to a Japanese journal might have escaped general attention, and perhaps have been doubted had not Fibiger and Bang of Copenhagen undertaken the verification of their findings. The work of the e Danish observers was published, it is interesting to note, in English. Drs. Murray and Woglom have given further verification, if such were necessary. On one point they seem to us to be rather severe on the work of their predecessors: they insist that too much reliance was placed on histological evidence. A reading of the paper by Fibiger and Bang leads us to believe, however, that their evidence is singularly complete and convincing. The only point which the workers of the Imperial Cancer Research Fund claim to be an advance is the value they attach to the transplantability of tumours as the prime test of malignancy, and they believe that the success of autoplastic grafts taken from the tumour at a fairly early stage enables one to ascertain definitely that the malignant stage has occurred. The alteration of environment of the proliferating edge of such a tumour introduces quite new factors, and it may be doubted if much importance should be attached to autotransplantation. Certainly the proceeding is in the nature of things inapplicable to human tumours of a histologically or clinically doubtful nature, and in the case of experimentally-induced tumours in mice the point of interest is not so much the percentage of neoplasms that can be classified as benign or malignant as the fact that undoubted malignant tumours can be produced. Drs. Murray and Woglom attempt also to draw a relationship between the "cancer age" and the onset of the proliferations induced by tar painting in mice. Throughout the various reports of the Imperial Cancer Research Fund one finds an insistence on the importance of age with regard to the development of cancer.

The previous experiments of Fibiger on spiroptera carcinoma, of Bullock and Curtis on cysticercus sarcoma of the liver of rats, as well as the experiments of various workers on tar cancer of mice, would seem to show beyond doubt that age as a factor *per se* is of no importance: it is merely a question of the length of time during which the causal agent, parasite or other irritant, has been in operation. Drs. Murray and Woglom have not entered into a discussion of the particular constituent in tar which has this effect on tissues. The opinion is strongly held amongst workmen engaged in the pitch industries in Wales that the incidence of tar warts and epitheliomata has increased since the anthracene fraction has not been removed, and the Home Office reports do not show any cases of skin neoplasms amongst men working with blast furnace tar. Recently Bloch and Dreifuss[1] in Zurich have shown that the substance inducing new growth is distilled over at a temperature above 300°, and this would probably correspond to the anthracene fraction. These, of course, are minor points, but the great advance resulting from the demonstration which the Japanese scientists and their successors have given with tar is that it enables us by the use of a common irritant to study the stages of growths from their inception to the end.

[1] *Schweiz. med. Woch.*, November 10th, 1921.

MASTERSHIP IN ORTHOPAEDIC SURGERY.

THE University of Liverpool has established a Mastership in Orthopaedic Surgery (M.Ch.Orth.). This is, we believe, the first occasion on which a university has established such a degree, and it is very appropriate that Liverpool should be the first university to do so; the fact that the scheme has been evolved with the advice of Sir Robert Jones and will be administered under his direction must ensure success. The degree will only be granted to candidates who have diligently attended a special course extending over fifteen months which the university is about to establish with the advice of a special board. Candidates must be (*a*) graduates in medicine of the university or an approved university, or (*b*) graduates in a faculty of the university or an approved university who are Fellows of the Royal Colleges of Surgeons of England, Edinburgh, or Ireland, or the American College of Surgeons. The first course will, we understand, begin next October. Sir Robert Jones has been appointed Director of Orthopaedic Studies and Chairman of the Board of Orthopaedics; the other members are the Vice-Chancellor, the Chairman of the Medical Faculty, Professor Macdonald (professor of physiology), Professor Beattie (bacteriology), Professor E. E. Glynn (pathology), Professor Thelwall Thomas (general surgery), Associate-Professor Simpson (anatomy), Mr. Armour and Mr. McMurray (orthopaedic surgery), Mr. Newbolt (general surgery), Mr. Dun (surgery of children), the Dean of the Medical Faculty, and Mr. Thurstan Holland (radiology). Mr. Thurstan Holland in addition is acting as Secretary to the Board. Candidates for the degree must attend combined courses of anatomy and physiology, and pathology and bacteriology, each extending over six months, a course in radiology and physiotherapy extending over three months, a clinical and practical course in general surgery extending over six months, and courses in clinical orthopaedic surgery extending over fifteen months. Candidates who hold the degree of Master of Surgery of an approved university or are Fellows of the Royal Colleges of Surgeons of England, Edinburgh, and Ireland, or the American College of Surgeons, may be exempted from the special courses in anatomy and physiology, pathology and bacteriology. The courses will be arranged in five parts of three months each. The courses in anatomy and physiology and pathology and bacteriology will be attended during the first two periods of three months each, and during these periods the afternoons will be given to general surgery and the orthopaedic clinic. During the third three months a candidate will attend a course in radiology and physiotherapy and the orthopaedic clinic. During the fourth and fifth periods of three months each a candidate will hold a clinical assistantship in an orthopaedic clinic, and will attend on one afternoon a week a general surgical clinical theatre. The first course will, we understand, begin in October, 1922. Terminal examinations will be held; the final examination will consist of written papers in the principles and practice of orthopaedic surgery, an oral examination, and a clinical examination. The fee for the courses in anatomy and physiology, pathology and bacteriology, and radiology and physiotherapy is six guineas in each case; for the clinical courses the fee is twenty guineas. The examination fee is £5, and for admission to the degree the same amount.

STANDARDIZATION OF SERUMS.

THE conference, attended by representatives of ten powers, which is being held in London this week by the invitation of the League of Nations Health Committee, has considered the steps that should be taken for the standardization of serums. The conference was formally opened at the Ministry of Health, on December 12th, by the Minister of Health, who, in welcoming the delegates, pointed out that invitations had been extended to countries

not members of the League. The chair was taken by Dr. Th. Madsen, Director of the State Serum Institute in Copenhagen, who said that work on the lines desired had been begun some years ago by the Medical Research Council. The conference proposes in the case of all the serums discussed to consider the tests for sterility, for the amount of antiseptics present, and for the amount of proteins. It is hoped to arrange for a series of investigations on a uniform plan in leading institutes in the different countries. It is proposed also to institute a uniform system of indicating the dates of preparation and of issue. At present standard diphtheria and tetanus serums are maintained at the Institut für experimentelle Therapie, in Frankfurt, and in the Hygienic Laboratory of the United States Public Health Service. These two institutions are being asked to interchange their standard serums and to send them to the other institutes which will participate in the proposed investigation, in order that the relation between the two standards may be determined. As the methods for the standardization of tetanus antitoxin vary in different institutes, a discussion of methods has been held, and a proposal has been put forward for an international unit of both diphtheria and antitetanus serums. With regard to dysentery serums, the position is much less well defined. The first question that must be settled is whether a standard serum should be prepared against the Shiga bacillus only, or whether it should include other dysentery bacilli. The action of meningococcus serum being to a great extent dependent upon the type of meningococcus against which it is prepared, knowledge must be obtained of the different types of meningococci in different countries, a uniform method of examination of the various types must be established, and a uniform system of nomenclature of the different types arranged. The four main methods of testing the potency of antimeningococcus serum at present in use are based on the agglutinin content; on the complement fixation standard; on the opsonin content (phagocytosis); and on the anti-endotoxic value and protective power. It is assumed that a serum rich in more than one of these antibodies will possess a comparatively high therapeutic efficiency, but further evidence on this point is needed. It is proposed that the standardized serums from different laboratories should be compared and different methods for standardization examined, that an investigation of pneumococci in different countries should be made in as many institutes as possible, and that a uniform nomenclature should be devised. The two main methods it is proposed to use for determining the potency of the antipneumococcus serum are based on its agglutinating power and its anti-infectious action. Here again the question of a polyvalent serum arises. The conference intends, if possible, to evolve a scheme of making the serum diagnosis of syphilis reliable and the results in different countries comparable. Each of the institutes participating in the inquiry will be asked to compare one or more other methods with its own by applying them in a large number of cases of known syphilis and of control cases. The results would then be collected and analysed and conclusions drawn, which would be submitted to other institutions for observation and experiment. On December 14th the delegates, together with a number of other guests, were entertained to luncheon by the Government, when Sir Alfred Mond was in the chair. The closing meeting of the Conference was held later on the same day.

PROTEIN DEFICIENCY AND PELLAGRA.

In an article published at the end of February (p. 311) reference was made to the conclusion of the Committee of Inquiry into Pellagra among Turkish prisoners of war that an inadequate supply of protein to the body tissues was important in the genesis of the disease, but it was at the same time pointed out that while an adequate supply of suitable protein was undoubtedly necessary it was not likely to be adequately utilized by the body tissues in the absence of a sufficiency of vitamins. As the result of many years' research and elaborate analyses of pellagrous and non-pellagrous diets in Egypt, Dr. W. H. Wilson,[1] Professor of Physiology at Cairo, has written a paper which greatly strengthened the case for protein deficiency as the essential factor in pellagra. He shows that the minimum daily intake of protein necessary to ensure against pellagra is the equivalent of 40 grams of animal protein, but there are considerable personal variations in normal persons as to the amount of protein necessary; labour raises the amount required, and so also, as will be seen later, does disease of the alimentary tract. Karl Thomas's view, that the minimum requirement of protein varies according to the kind of protein, is accepted; he has stated that the "biological value" of beef protein is 104, of milk 100, rice 88, potato 79, wheat 39, and maize 29. The explanation of the discrepancy in the biological values of proteins from different sources appears to be the well known difference in the proportion of the various amino acids which make up the protein molecule; in 1913 the late Professor F. M. Sandwith suggested that the absence of tryptophane (indol-amino-proprionic acid) from zein (a protein in maize) is an important factor in the etiology of pellagra. The question as to the part played by maize may now, it is contended, be answered in the main by pointing to the low biological value of maize protein: 50 per cent. of that in the endosperm is zein; in other words, pellagra is not due to maize as such. From analysis of a series of diets Professor Wilson finds that those with a biological value in protein of 30 or less are all primarily pellagrous, whereas those with a biological value above 37 are relatively non-pellagrous if the diet is sufficient to meet the energy requirements. The deficiency of protein may be primary when the supply is insufficient or is in such an indigestible form that it cannot be utilized; or, and this is a most important point, it may be secondary when, from disturbances of digestion or other conditions, the supply of protein cannot be assimilated. In pellagra intestinal disorders are common, and so is indicanuria, which represents a loss of protein and tryptophane. Professor Wilson points out that, measured by the indican in the urine, the protein destroyed in the intestine may amount to a considerable part of the total nitrogenous intake. Indicanuria is of course closely related to the diminution in the hydrochloric acid of the gastric juice so common in pellagra, for as a result the bacterial flora flourishes and the secretion of pancreatic juice fails. The liability of pellagra to relapse may be connected with achlorhydria and the resulting intestinal putrefaction, for such persons require more protein than normal individuals, and on a diet sufficient for the latter may suffer from protein insufficiency. While healthy persons may escape pellagra when their food protein has a biological value of no more than 20, the minimum safe value for a community would be 40, for hard labour probably 50, and for persons with chronic intestinal disease or previously the subjects of pellagra as much as 60. By applying these conclusions obscure cases of pellagra—for example, those occurring in this country—may be explained. Though pellagra is agreed to be a disease of the poor, starvation and pellagra are not convertible terms, for pellagrins may be otherwise well nourished; in sprue, in which there is usually much emaciation, pellagra is not noticeable; but it is interesting to note that in sprue the coefficient of protein assimilation is high, indicanuria is not prominent, and the hydrochloric acid in the gastric juice is increased rather than diminished.

DISTRESSED PROFESSORS.

We have received from Sir Maurice de Bunsen, Chairman of the Universities Committee of the Imperial War Relief Fund, an appeal, signed by a number of distinguished British men of science, for contributions to the Committee's

[1] W. H. Wilson, *Journ. Hyg.*, Cambridge, 1921, xx, 1-59.

fund for the assistance primarily of professors and lecturers in the universities of Austria. Information recently received has induced the Committee to extend its work to the universities of Russia. The average Viennese professor, with his wife and children (the appeal states) draws but the equivalent of £40 to £60 a year to maintain himself and his family. From the Armistice to the end of last year one-tenth of the professors and lecturers of Austria died, largely as the result of want, starvation, and consequent disease. The appeal made to undergraduates in this country has met with a good response as a plea to students for students. The sum of £1 a head a student is being gradually raised, mainly by student effort, until a total of some £32,000 has been collected. In Holland the amount raised, taking into account the value of clothing and food, is about £11,000. South Africa, with only 3,000 students, has sent about £3,400, and America has raised roughly £80,000. This money is being spent on a carefully organized plan for the relief of the most destitute students in the universities of Austria, Hungary, Poland, and Czecho-Slovakia. The special appeal now made is to men of learning in Great Britain and Ireland to help in the work of relieving the distressed senior members of sister universities. Information received shows that between 1914 and 1920 the number of doctors who died in Russia owing to war and distress was 30,000. The Universities Committee hopes, in co-operation with the British Committee for Aiding Men of Letters and Science in Russia to relieve some of the most acute distress existing in the universities of Russia. Cheques should be made payable to the Honorary Secretary, Universities Committee, and sent to its Organizing Secretary at Fishmongers' Hall, London Bridge, E.C.4.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.

AFTER a considerable lapse of time the Clarendon Press has sent forth three large instalments of the Oxford English Dictionary,[1] and has brought the conclusion of the whole work within sight. As it happens, the portions of the alphabet dealt with (U—Unforeseeable, W—Wash, and X—Zyxt) contain few medical terms as compared with many much smaller parts which have already appeared. The reason of the comparative scarcity of medical words is found in the facts that Greek is hardly at all represented in the portion of U under consideration, that the W part shows an entire absence of both Greek and Latin derivatives, and that Y is in similar case. The words under X and Z, being largely Greek and Latin in origin, serve in some measure to make up the deficiency; they might wholly have made it up had not the editors deliberately held their hand, as is revealed by their statement that "many Latin names belonging to the systematic terminology of zoology and botany do not fall within the scope of this Dictionary." In the U portion there are a few medical terms of some interest, such as *udder-clap* and *udder-ill* (diseases of the udder of ewes); *ulcer* with its associated words, including the rather rare *ulcuscle* (a small ulcer); *ulna* with its derivatives; *uloid* (having the appearance of a cicatrix, from the Greek, οὐλή, a scar); *umbilic* with *umbilical*, *umbilicality* (a seventeenth century word for umbilical cord), *umbilicate*, and *umbilicus*; *unction* (in its medical sense); *under-blade-lurker* (an obsolete name for the subscapular muscle); and *undercot*, a rare word, signifying to fester or suppurate inwardly. As usual, the illustrative quotations are chosen with wonderful appropriateness; for instance, under *umbilical*, one reads (from a seventeenth century book): "Umbilical Arteries are two arteries marching from the Navil, through Peritonaeum to the sides of the Bladder"; and again, "The Embrio doth breath, but not feed, through the Umbilical vessels"; and yet again (in a figurative sense, from Sir Thomas Browne), "In his immortall and diviner part hee seemed to hold a nearer coherence, and an umbilicality even with God himselfe." The medical meanings of ordinary words are, as the editors have led us to expect, never forgotten and never unillustrated; for example, under *unfavourable* one finds the definition "not favourable, of diseases or physical injuries," and the quotation, "they were seized with an unfavourable small-pox." Among the rubrics from W to Wash, there is hardly a single strictly medical term, but the non-medical words with medical meanings are all presented fully. Thus *wafer*, with the sense of a cachet, is defined and illustrated; so is *waff*, with the meaning of "slight" (a slight attack or touch of illness); and so are *walking* (for example, walking the hospitals), *wambly* (affected with nausea), *wandering* (for example, wandering cells, spleen, kidney), and *want* (mentally deficient). There is, however, one interesting medical term, *wall-eyed*, with an obscure derivation; it is used both of human beings and horses, and sometimes wrongly as if it meant blind-eyed; it really signifies having an eye the iris of which is whitish, streaked, parti-coloured, or different in hue from the other eye, or having a divergent squint—in a word, "speckled-eyed." A quotation of 1694 speaks of a man as having "one eye bigger than the other and divers in colour, being a Hazel or Wall Eye." In the third instalment, which contains the last three letters of the alphabet, there are some commonly used medical words. *X rays* have a prominent place, and illustrative quotations from the year 1896, their discovery by Roentgen having taken place in the previous year. Other terms are *xanthelasma*, *xanthine*, *xantho-* (in many combinations), *xeno-* (meaning foreign or strange in many compound words, amongst which, however, one misses *xenomenia* or vicarious menstruation), *xero-* (as in xerostomia or dry mouth), *xerosis* (ichthyosis), *xiphoid* (sword-shaped or ensiform), *xiphopagus* (double monsters such as the Siamese twins), *xylaloes* (equivalent to lignaloes) and *xylotherapy* (the use of certain kinds of wood in the cure of disease). Among the Y's attention is arrested by *yaw* (a tubercle) and the disease *yaws* (which, like measles and mumps, is not a plural). The earliest quotation containing the word yaws is dated 1679, and reads: "Both which quarters of the world [*sc.* American and African deserts] bring forth the monstrous yaws as a proper stock to engraft a new cion of Disease." *Yean*, meant to give birth to; *yeld* signifies sterile or not yielding milk; *yellows* is a synonym for jaundice; and *yex* is a hiccup. An interesting and rather surprising fact is that the earliest quotation containing *yellow fever* is dated 1748. Amongst the Z's *zona* and *zoster* (both equivalents for herpes zoster), *zygoma* and various *zygo-* compounds catch the eye which is on the outlook for medical terms; all are sufficiently illustrated and clearly defined. The Editors are to be congratulated on the appearance of these three parts of the N.E.D. and on the near approach of the completion of their huge task.

[1] *A New English Dictionary on Historical Principles.* Edited by Sir James A. H. Murray, Henry Bradley, W. A. Craigie, and C. T. Onions. Vol. x, U to Unforeseeable, by W. A. Craigie, M.A., LL.D.; W to Wash, by Henry Bradley, M.A., LL.D.; X to Zyxt, by C. T. Onions. Oxford: At the Clarendon Press, etc. Humphrey Milford. July, 1921. (Prices, 10s., 15s., and 10s. net.)

THE MAUDSLEY COURSES IN PRACTICAL PSYCHOLOGY.

THE fourth course of lectures and practical instruction for the diploma of psychological medicine, to be given at the Maudsley Hospital, Denmark Hill, S.E., will commence on January 3rd, 1922. The course will consist of two parts, Part I being conducted by Sir Frederick Mott, Dr. F. Golla, and Dr. Henry Devine. Sir Frederick Mott will give eight lectures on the anatomy of the nervous system, followed by practical instruction and demonstrations on methods of staining nervous tissue and preparing it for microscopical examination; microscopic sections will be distributed, illustrating the principal diseases of the nervous system, for mounting as a permanent collection. Dr. Golla will give eight lectures on the physiology of the nervous system,

followed by practical instruction and demonstrations on physiological chemistry (including the chemistry of the nervous system, physico-chemical methods, blood and urine analysis, and gastric contents analysis) and practical physiology (including the recording of reflexes and tremors in man, and the action of drugs on the autonomic system). Similarly, Dr. Devine will give eight lectures on psychology, followed by practical instruction and demonstration of psycho-physical methods and memory and intelligence tests. Part II, which will begin in April, 1922, will include lectures and demonstrations on the diagnosis, prognosis, and treatment of mental diseases; mental defect and crime; the practical aspect of mental deficiency; pathology of mental diseases, including brain syphilis, its symptomatology and treatment; the symptomatology of mental diseases; the psychoneuroses; and demonstrations in neurology. Full details will be published later. The fee for the whole course (Part I and Part II) is 15 guineas, or for either part separately 10 guineas; for one single series of lectures in Part I the fee is 4 guineas, and in Part II 2 guineas. Inquiries as to lectures, etc., should be addressed to the Director of the Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E. The Fellowship of Medicine, 1, Wimpole Street, W.1, will collect fees from, and issue admission tickets to, medical men intending to take the course who are introduced by the Fellowship.

CLAYDEN v. WOOD-HILL.

A REPORT of the case—Clayden *v.* Wood-Hill—which resulted in a verdict of £750 damages against Dr. Wood-Hill, appeared in the JOURNAL of November 26th, p. 919. We announced in our last issue that the matter was under the consideration of the Medico-Political Committee of the British Medical Association. At a special meeting of the Committee held last week (December 7th) the opinion was unanimous that, if the verdict were allowed to stand, it might prove a menace to medical men placed in circumstances similar to those in which the defendant was himself placed, and that if there were reasonable prospects of the verdict being set aside by the Court of Appeal or the defendant succeeding if a new trial were ordered, steps should be taken to that end. It was reported by the Solicitor that the last day on which an appeal could be lodged was December 13th. The Committee heard a full statement of the legal position from the Solicitor, who pointed out that in every case of this nature it might be taken that the Court of Appeal would intervene only on one or other of the following grounds, namely: (*a*) That there was no case to go to the jury; (*b*) that the verdict was against the weight of evidence; (*c*) that there was misdirection on the part of the judge; (*d*) that the verdict involved questions of law as distinct from questions of fact; or (*e*) that the damages were excessive. Mr. Hempson explained that he was fully acquainted with all the facts of the case, his firm having acted for the defendant at the trial. Whatever support might be given by the British Medical Association, the appeal would have to be that of Dr. Wood-Hill as defendant in the action, the Association having no *locus standi* in law apart from him. The most that could be looked for from the Court of Appeal would be not a reversal of the verdict and judgement in favour of Dr. Wood-Hill, but a direction for a retrial of the action by a judge sitting with a jury, in which event the risk of an adverse verdict would again have to be run. After discussion and further consultation with the Solicitor, the Committee agreed unanimously that the case was of sufficient importance to justify the Association in doing whatever was possible in order to test the judgement and get the decision reversed. Dr. Wood-Hill had stated that, acting on legal advice, he had refrained from appealing on his own behalf, but would give all the help he could provided the legal advice received by the Association satisfied him that there was reasonable prospect of a successful issue resulting from an appeal. The Committee instructed the Solicitor to obtain at once counsel's opinion and empowered a small sub-committee to act for it should the opinion be in favour of taking the case to the Court of Appeal. Counsel's opinion has now been obtained. The joint opinion of Sir Ernest Wild, K.C., and Mr. H. C. Dickens, by whom the defendant was represented at the trial, was to the effect that the prospects of success were not such as would justify an appeal. They pointed out that it would be possible to succeed only: (1) On the ground of misdirection by the judge; or (2) on the ground that the verdict was against the weight of evidence. After examining the judge's summing up and the evidence given in court counsel stated that the chances of success were very problematical, and they had come reluctantly to the decision that they could not advise an appeal with any degree of confidence. The Chairman of the Medico-Political Committee reported accordingly to the Council of the Association at its meeting on Wednesday, December 14th. The Council approved the course which the Committee, acting upon legal advice, had taken. A second list of subscriptions to the fund now being raised to reimburse Dr. Wood-Hill for the heavy expenses incurred by him in defending the action is printed this week at p. 1057. The Treasurer of this fund is Sir Hamilton Ballance, All Saints Green, Norwich.

RENEWAL OF MOTOR LICENCES.

MEDICAL men may be reminded that by the new arrangements that have come into force this year they would do well to set about renewing their motor car licences as soon as possible, and not wait until the turn of the year, as formerly. All information applicable to each individual case can be obtained by applying for the necessary form at the local post office.

THE opening of the Sir Alfred Jones Research Laboratory at Freetown, Sierra Leone, will be celebrated in Liverpool on Tuesday next. Sir Francis Danson, Chairman of the Incorporated Liverpool School of Tropical Medicine, will preside at a dinner to be held at the Adelphi Hotel. The guests will be the Earl of Derby, Chancellor of the University and President of the Liverpool Chamber of Commerce, and Dr. B. Blackwood, Professor of Tropical Diseases of Africa in the School.

England and Wales.

NORFOLK WAR HOSPITAL, THORPE.

AT the Norfolk War (General) Hospital, Thorpe, Norwich, now reverted to its normal use as the Norfolk County Mental Hospital, Field-Marshal Earl Haig unveiled a commemorative tablet on November 30th, set up in the front hall of the main buildings. The event was celebrated with due ceremony, and the tablet was, after unveiling, dedicated by the Lord Bishop of Norwich in the presence of a distinguished gathering, which included the Dean and choir of Norwich Cathedral and the Earl of Leicester, Lord Lieutenant of the County, Major Delaval Astley, the Vice-Chairman of the Committee of Visitors, and others. Marshalled in groups on the front lawn were doctors, nurses, and ex-patients, officers and men, disabled ex-service men from neighbouring hospitals, the Norwich Transport and Ambulance Company, and Commandants of Norfolk Auxiliary or Red Cross hospitals. Escorted by Lieut.-Colonel D. G. Thomson, C.B.E., the officer commanding the hospital, the Field-Marshal inspected the various groups, saying a few kindly words appropriate to each. The band of the Norfolk Regiment added music to the interest and success of the ceremony.

Scotland.

GLASGOW CONFERENCE ON VENEREAL DISEASE.

A CONFERENCE was held in Glasgow, on December 2nd, of representatives of local authorities and others interested in the campaign against venereal diseases in Scotland, under the auspices of the Scottish Committee of the National Council for Combating Venereal Diseases. Of 285 local authorities who were invited, 196 sent representatives, and the meeting was stated to be the largest held in Scotland on such a question. Mr. E. B. Turner submitted a paper prepared by Sir Malcolm Morris on the prevalence of venereal disease and the work of the National Council. It was hoped that an active programme would be pursued in Scotland to secure that the subject of venereal disease received an adequate place in all permanent educational arrangements, and that the training of all doctors and nurses should include adequate instruction in the subject. Persons responsible for the training of adolescents should be given a course of lectures on the disease and its social effects in order to enable them to guide the young people under their care. Particulars of the work of the medical department of the National Council were given and the desirability was emphasized of a certificate of health for people before marriage. Sir Leslie Mackenzie read a paper on administrative aspects of venereal disease control in Scotland. Thirty-one treatment centres had been established and were in full operation in Scotland, and these centres served more or less adequately a very large proportion of the population. Only 27 per cent. of the local authorities had not complied with the regulations and had not submitted schemes for approval. Dr. McGregor Robertson, chairman of the Scottish Committee, dealt with the functions and proposed operations of that committee. Without the support of the local authorities they realized that their work was likely to begin and end in words, and he sought to stimulate local interest and encourage and promote local effort in dealing with those diseases. Dr. A. K. Chalmers said that as a means of preventing the spread of the disease it could not be suggested that the present dispensary scheme was effective, but it might be urged that it had a certain educative value. Compulsory treatment and (where necessary) detention was the only logical sequel to notification, and this was the rock upon which it split. Dr. Richardson (Haddington) introduced a discussion on the problem in rural districts, where it was much more difficult to spread knowledge about venereal diseases that in town areas. Two methods had been suggested, one by propaganda by means of the cinema and the other by co-operation with the education authorities.

EDINBURGH ROYAL INFIRMARY.

At the third annual meeting of the League of Subscribers to the Edinburgh Royal Infirmary the organizing secretary said that notwithstanding the many difficulties of the past year they had exceeded the subscriptions of the previous year by more than £4,800. A total sum of £17,808 has been collected from the various groups of subscribers, comprising industrial employees and those engaged in commercial and business establishments throughout the city and in public works in the country districts now embraced in the scheme. During the year the membership of the league had been extended from 55,000 to 75,000, the increase being equally divided between the city and country districts. The membership was divided into 989 groups in town and country, with numbers ranging from thousands to less than a dozen in a group, while the rate of subscription varied, the minimum being one penny weekly. The chairman of the board of management of the infirmary congratulated the league on the effort made. There had been 13,600 in-patients in the infirmary during the year, while out-patients numbered 41,800. The infirmary was the largest general hospital in Great Britain, and was well worthy of all the support that they and others gave it. Last year the expenditure was £130,000, and this year he was afraid it would be between £134,000 and £135,000, but from all sources the income over expenditure would show a balance to the good. They would not, however, have been able to show such a good result except for the fact that the Prince of Wales's Fund had been drawn upon to help the infirmary, while they had also received a large amount from legacies.

PENSIONS INQUIRY AT ABERDEEN.

An inquiry was opened at Aberdeen, on December 9th, by representatives appointed by the Minister of Pensions to inquire into complaints regarding the Orthopaedic Annexe at Forbesfield, Aberdeen, and the circumstances regarding the resignation of the committee in charge. The inquiry was conducted by Mr. George Chrystal, permanent secretary of the Ministry of Pensions, Sir Lisle Webb, Colonel Warden, and Colonel Richardson. After inspecting the annexe, the commissioners met representatives of the Aberdeen Branch of the British Legion, who put forward complaints in regard to the accommodation for ex-service men at Forbesfield. It was stated that the accommodation was totally inadequate, that there were not sufficient huts to house the men, that the heating arrangements and cloakroom accommodation were not satisfactory, and that the approach to the annexe was in a bad condition. Mr. Chrystal said that he had inspected the annexe, and was quite in agreement with the British Legion, and promised that there should be no delay in having the matter remedied. A representative of the British Legion spoke of the good treatment which the men received under Dr. Middleton Connon. Mr. Chrystal said that he personally shared that opinion.

GLASGOW ROYAL INFIRMARY.

A most enthusiastic and happy gathering took place on December 5th in the Athenaeum Restaurant, Glasgow, when 205 nurses, past and present, of the Glasgow Royal Infirmary met at this the first annual dinner. The chair was occupied by Mrs. Strong, who was formerly matron of the institution, and who retired from that position in 1907 after many years' service. There were present as guests Mr. James Macfarlane (Chairman of Managers), Mr. James S. Craig and Professor John Glaister (Managers), and Dr. J. Maxtone Thom (Superintendent). After dinner a full toast list was carried through by the nurses. In the course of the evening it was unanimously decided to form a league for Glasgow Royal Infirmary nurses, and if possible to publish a magazine at regular intervals for circulation among its members.

NEURO-INDUCTION.

The autumn meeting of the Scottish Division of the Medico-Psychological Association was held in Edinburgh on Friday, November 18th, when Dr. Haydn Brown read a paper, and gave a demonstration of the methods he employed in "neuro-induction." The audience contained many recognized authorities on psychotherapy, including Professor George Robertson, Dr. George Ker, Dr. Murray Lyon, Dr. Bryce, Dr. Brock, Dr. Henry, and Dr. David Yellowlees. The speakers were unanimously of opinion that what Dr. Haydn Brown called "neuro-induction" was simply light hypnosis or the hypnoidal state of Boris Sidis, induced by a recumbent attitude in an easy position, accompanied by the usual suggestions and manipulations employed in inducing hypnosis. The opinion was further expressed that there was nothing new in the methods demonstrated, and nothing that was not employed in appropriate cases by several of the speakers in their own practice. The introduction of a new term to describe so familiar a process and conditions was therefore deprecated.

Ireland.

INSURANCE CERTIFICATE FEES FOR MEDICAL MEN.

ON the invitation of the Local Medical Committee, a meeting of medical men in Belfast and neighbourhood was held in the Medical Institute, Belfast, on December 6th, "to consider the proposed reduction of fees for certificates under the Insurance Act." Professor R. J. Johnstone, F.R.C.S., M.P. (Northern Ireland), presided, and there was a good attendance. The following resolution was passed:

> That this meeting of members of the medical profession in Belfast and in the surrounding counties protest most strongly against the proposed reduction of the present fees for certification in connexion with the National Insurance Act, as the present rate does not even yet represent the rate of remuneration that was originally agreed on, when regard is had to the depreciation in the value of money.

The Dublin Borough Medical Committee (Professor R. J. Rowlette, F.R.C.P.I., in the chair), passed the following resolution:

> That inasmuch as the original agreement between the medical profession and the Treasury, arrived at in 1915, was to the effect that certain sums of money were to be allocated by the Treasury for expenditure in Ireland on (1) certification, (2) on the appointment of medical referees acceptable to the medical profession; and seeing that the Treasury has not in the six years ensuing adhered to their part of the bargain, the medical profession must decline now to agree in advance to any further arrangements suggested by the Treasury in this matter.

Strongly worded protests by other Borough and Local Medical Committees throughout Ireland have been made with regard to the action of the Treasury; it is pointed out that, first, by its violation of its undertaking with the Irish Medical Committee in not appointing whole-time medical referees, etc., the Treasury managed to have from 30 to 40 per cent. of the equivalent grant unexpended each year since the Insurance Act came into operation, and secondly, that owing to the circumstances in which the increased fees for certification were granted in 1920 the Treasury is not justified in making any reduction.

Dublin Infant Aid Society.

The Committee of the Dublin Infant Aid Society is making its annual appeal for funds to enable it to continue the supply of milk. This charity, which is the means of saving the lives of numberless children, is one which should appeal to many. Indeed, it may be looked on as a duty as much as a charity to support it, for the health of the future generation depends on the health of the babies of the present. The work, which is non-political and non-sectarian, is carried on in a thoroughly practical and businesslike way. Through the city registrar the committee has a knowledge of all births in the city of Dublin. The nurses visit those who live in the poorer localities and might be expected to be in need of help. The voluntary visitors then visit until the baby is one year old. The nurses' duties are to see that the child's health is not neglected until 5 years of age. The milk dépôts and the sewing guild of the society were formed to help the very poor. There are five milk dépôts, in all of which milk is given either free to those who cannot afford to pay anything, or at a reduced price to those who can afford to pay a little. It will be understood that the expense of carrying on those dépôts is high owing to the price of milk at present.

Ulster Medical Society: Annual Dinner.

The annual dinner of the Ulster Medical Society was held in the Medical Institute, Belfast, on December 8th. Owing to the illness of the President, Dr. Robert Hall, the Vice-President, Mr. J. A. Craig, F.R.C.S.Eng., occupied the chair. The society had as guests the Lord Mayor of Belfast, the Speaker of the Senate of Northern Ireland (the Marquis of Dufferin and Ava), the Speaker of the House of Commons of Northern Ireland (the Hon. Hugh O'Neill), the Lord Chief Justice of Northern Ireland, together with Lords Justices Moore and Andrews, Mr. Justice Wilson, the Recorder of Belfast, and the President of the Law Society. The following toasts were given: "The King," by the Chairman—the National Anthem was sung; "The Prosperity of the City of Belfast," by Professor R. J. Johnstone, M.P., responded to by the Lord Mayor; "The Senate and House of Commons of Northern Ireland," proposed by the Chairman and responded to by the Speaker of the Senate and by the Speaker of the House of Commons; "The Legal Profession," proposed by Professor J. A. Lindsay, and responded to by the Lord Chief Justice; the Recorder and Lord Justice Andrews also spoke; "The President," proposed by Dr. Thomas Houston, who referred with great regret to the illness of Dr. Hall, and said that all would join in wishes for his speedy recovery; he coupled with the toast the name of their Chairman and Vice-President, Mr. J. A. Craig, to whom they owed a debt, as at an hour's notice he undertook to fill the gap, and had done so with the signal success that they had all witnessed. Mr. Craig replied, and proposed the healths of the Honorary Secretary, Dr. W. W. D. Thomson, and his two coadjutors, Drs. Marshall and Turkinton, to whom fell all the labour and work; Dr. Thomson replied.

Correspondence.

HYPERTROPHIC PYLORIC STENOSIS AND HYPERADRENALISM.

SIR,—In your issue of November 26th (p. 891) appears a communication by Messrs. H. Tyrrell Gray and F. N. Reynolds in which congenital hypertrophic pyloric stenosis is attributed to hyperadrenalism in the mother. This extraordinary theory is supported by the following evidence:

> "Clinical evidence appears to us to support the view that closure of the pyloric sphincter is controlled by stimulation of the sympathetic nerve supply and by its hormone (adrenaline), and the logical inference is that the pyloric hypertrophy is associated with hyperadrenalism, the result of excessive sympathetic stimulation. . . . Now there is no evidence of hyperadrenalism in the child; but, since it is generally conceded that the hypertrophy takes place *in utero*, it is probable that the hyperadrenalism is maternal in origin."

Anxiety and apprehension in the pregnant mother and the "first child" factor are also put forward as arguments. The theory was previously published by Dr. Pirie.[1]

The theory makes several unwarrantable assumptions. In the first place, it is not at all certain that the normal effect of sympathetic stimulation in man is a constriction of the pylorus. I can find no authoritative account of any experiments on this point. Even if constriction has been obtained in any particular series of experiments on animals, we should be very careful not to assume that such would be the action of the sympathetic, or the only possible action of the system in the human subject. We know that the strength and the quality of the stimulus make a great difference in the result. We know also that the effects of sympathetic stimulation are not the same in different classes of animals. We may further suspect that the effects differ in different animals under different conditions.

As to the effects of adrenin, it must not hastily be assumed that these are in all respects identical with those of sympathetic stimulation. We know that the effects of the drug vary according to the dose, and very probably with several other unknown factors. I am aware that there are some isolated statements that adrenin constricts the pylorus, but I submit that the evidence is not convincing.

In speaking of hyperadrenalism, Messrs. Gray and Reynolds probably mean over-activity of the chromophil tissues. About the adrenal body (cortex) we know practically nothing, nor yet have we any notions of what may be the functions of the adrenal body in conjunction with the chromophil tissue in it (medulla). It is not known what are the normal functions of the chromophil tissues, nor are there reasonable grounds for supposing that there is such a thing as over-activity of these tissues. It is not easy to conceive what would be the results on the whole organism of excessive activity of the chromophil tissues—assuming that this means increased pouring out of adrenin, and that adrenin has exactly the same effects as stimulation of the sympathetic. From the data available it would seem that the effects on heart, blood vessels, muscles of alimentary tract, organs of secretion, and other structures will be so complicated and so serious that any increased contraction of the pylorus would never be noticed. It seems curious that this one possible action should be singled out to account for a definite malformation.

Again, one is urged to inquire, why should the effect be manifested on the foetus, and not on the mother?

But the starting point of the whole hypothesis seems to be the emotional theory of adrenin secretion. It is only just to point out that this theory has never been firmly established.

Taking all these points into consideration, it is lamentable that the record of a good piece of surgical work—the relief of an intestinal obstruction by a simple incision—should have been spoiled by the introduction of a hypothesis which is not only totally unfounded, but which is not even plausible. The publication of such views brings the whole subject of internal secretion into disrepute, and can only have the effect of deterring critically minded

[1] *Lancet*, September, 1919.

clinicians from exploring what might in many cases turn out to be fertile territory.—I am, etc.,

SWALE VINCENT.

Middlesex Hospital Medical School, Dec. 6th.

PERFORATION OF THE NASAL SEPTUM IN COCAINE TAKERS.

SIR,—I regret that, by my letter published in your issue of November 27th, I failed to make my meaning clear to your correspondents. That perforation of the cartilaginous nasal septum does occur in cocaine sniffers, and that such perforation apparently stands in definite relation to the taking of the cocaine by the nose, has been known abroad, in the States and in Canada, for some years.

I have found no mention of the fact in any English textbook; but, of course, I may have failed to consult the right authorities.

I am well aware that septal perforation occurs with special frequency amongst workers in certain trades, etc.; and that many explanations have been given for its occurrence in other persons, who have not been suspected of the cocaine habit.

But Dr. O'Malley's logic—that, since perforation of the nasal septum occurs in people "who never had access to cocaine," its presence in cocaine takers must be regarded as merely coincidental—is equally capable of proving that, since such perforation occurs in people who are not workers in either salt mines or chromic acid factories, its presence oftentimes, amongst those who *are*, is merely coincidental. So, too, for syphilis. Dr. Tilley, however, thinks that people take to cocaine because a perforation is forming as a result of irritation from collected dust and nose-picking; he regards the ulceration as antecedent rather than consequent, to the habit. My point is simply this: Perforation of the cartilaginous septum is of sufficiently frequent occurrence in notorious cocaine takers to warrant our attaching some diagnostic importance to the association, in any particular person, of such nasal perforation with a certain group of nervous symptoms.

In my experience perforation of the septum in cocaine takers is always circular. It is not "button-hole," as suggested by Dr. Tilley. A button-hole is a slot, at most elliptical, but never circular. The septal perforation of cocaine takers is described in *La Cocaïne*, by Courtois-Suffit (Masson et Cie, Paris).—I am, etc.,

London, W., Dec. 10th. F. G. CROOKSHANK.

MULTIPLE TOOTH EXTRACTION.

SIR,—The latest craze of the medical practitioner appears to be to advise his patient to "have all your teeth extracted"; on any affection of the eye, rheumatic pains, rheumatoid arthritis, gastritis, and many other diseases, the same advice is given. Although there is, no doubt, much to be said in favour of this advice in certain circumstances is it not possible that it is often taken a little too far? A case in point: a healthy man, aged 28, a cycle agent in possession of a set of teeth far above average, consulted me complaining of "inflammation of the left eye." The history was that his eye had been inflamed and painful for a week; he had seen his medical adviser several times and was informed that he had "an ulcer of the eye" and strongly advised to have all his teeth out. On examination I found a minute metallic filament embedded in the cornea which with the help of a solution of cocaine and a needle was easily removed.

This case may be exceptional, but I am convinced that in recent years the advice so simple to give—"have all your teeth out"—is often given without due consideration of all that this advice entails.—I am, etc.,

Southsea, Dec. 6th. MONTAGUE WAY.

AMBROISE PARÉ.

SIR,—Your reviewer W. G. S. is rather severe on Ambroise Paré, to whom he is less than kind. "As to his midwifery," W. G. S. says: "Philumenos and Soranos had described podalic version on the living child; Paré only referred, with Celsus, to podalic version for the extraction of a dead foetus."

The first part of this sentence is true enough, though how Paré's credit can be affected by the work of Soranus, which was only rediscovered in the nineteenth century, I fail to see.

Philumenos, as quoted by Aetius, certainly in one brief sentence recommends podalic version on the living child. He can hardly be said to describe it, for the whole matter is contained in the following sentence: "At si caput infantis locum obstruxerit, in pedes vertendus est, et ita adducendus." But the practice had completely fallen into disuse until Paré's time, and he revived it by his writings.

W. G. S.'s statement that Paré "only referred to podalic version for the extraction of a dead foetus" is not correct. The heading of Paré's chapter (I quote from the English translation, not having access to the original French) is, "Of the chirurgical extraction of the childe from the womb, either dead or alive." Moreover, in the course of his very precise directions he advises that one of the arms be allowed to remain up by the side of the head, on account of supposed danger of the os contracting round the neck and so killing the child. It is thus clear that he is speaking of version of the living child.

Again, W. G. S. says: "He believed that the pubic symphyses separated." This is the reverse of the fact. Paré says: "But the bones of the share, called ossa pubis, I have never seen to be separated, as many do affirm." What W. G. S. was probably thinking of is Paré's assertion that the ilia separate from the sacrum at the time of labour, which he declares that he has actually seen in *post-mortem* examinations of women who have died in labour.

Finally, W. G. S. says: "Although Paré does not mention it, Guillemeau states that he had seen Paré perform dilatation of the cervix, accouchement forcé; and that Paré's own married daughter had been so delivered." This evidently refers to Guillemeau's account of his own successful treatment of Paré's daughter for *ante-partum* haemorrhage, which is worth quoting in full. (Again I quote from the English translation (1612).)

"The yeare 1599" (Paré died in 1590), "Madam Simon, yet alive, daughter to Mr. Pareus Counsellor and Chief Chirurgion to the King, being ready to lie downe was surprised with a great flux of bloud . . . and because of great swounings that took her every quarter of an houre through the losse of bloud she had, Mr. Marchant my son in lawe and myselfe were sent for. But I finding her almost without pulse, having her voice weak and her lips pale; I told her mother and her husband that she was in great danger of her life; and that there was but one way to save her, which was to deliver her speedily: the which I had seen practised by the late Mr. Pareus her father, who had caused me to do the like, unto a gentlewoman of Mad. de Seneterre. Then her mother and her husband earnestly intreated us to helpe her and that they would put her into our hands to dispose of her. And so sodainely, following the advice of the physitions, she was very happily delivered of a lively child."

Earlier in the chapter the procedure is described, which is simply that of podalic version and rapid extraction. There is no need to use the term "accouchement forcé" of such a very ordinary procedure. As to three-bladed dilators, as hinted by W. G. S., there is not a word of such a thing.

Action and reaction are equal and opposite, and I can only conclude that the indiscriminate eulogy of Paré on the part of the author reviewed produced a reaction on the part of W. G. S. calculated to neutralize it. Paré, with his modest saying, "Je le pansae Dieu le guarist," would have wished to be saved both from his friends and his enemies.—I am, etc.,

Liss, Hants, Dec. 8th. PHILIP D. TURNER, M.D.Lond.

VENEREAL CLINICS: A LAY POINT OF VIEW.

SIR,—Unlike Dr. Reginald Miller, I am very strongly of the opinion that the BRITISH MEDICAL JOURNAL has given valuable assistance to the antivenereal campaign by publishing "Venerealee's" letter in the issue of November 26th.

To those who refuse to live in a fool's paradise and who prefer to face the truth, however unpleasant it may be, the blindness of certain sections of the public, especially the feminine public, to the wide incidence of sexual irregularity amongst unmarried men is a great difficulty in driving home the venereal problem. Few with a large experience either of venereal disease or of the outlook of young unmarried men can fail to realize that the views expressed by "Venerealee" are those of a very large section of our young men. We have to face the problem

of the unchaste as it exists to-day, however remote the outlook may be from the idealism with which we sympathize.

Dr. Marion Mackenzie, in common with many medical women and women social workers, quite naturally finds it difficult to give credence to the opinions expressed by many responsible men that the large majority of young men indulge, either occasionally or frequently, in irregular sexual intercourse. For these ladies are the very last to whom such men would confess their inmost thoughts on such a matter, and it is only after close contact and intimate personal association that young men admit even older men into their confidence.

It is clearly a matter of paramount importance that the children of this country should be trained in the development of self-control, but in the meantime what can be done to limit the infection amongst those who persist in satisfying their sexual instincts? Amongst such, the raising of the individual's sense of responsibility towards his fellow citizens, to the extent of making him realize that if he indulges in such anti-social acts it is his duty to take such precautions as will render these acts the least likely to be followed by infection, which he may transmit to innocent persons with whom he may afterwards be associated, appears the method most likely to be successful. For this purpose the knowledge of the principles and practice of immediate self-disinfection is necessary, and it would appear very advantageous that venereal clinics should be used as one of the means of disseminating this knowlege.

"Venerealee" expresses his gratitude for the kindness, sympathy, and efficiency that he met with at the St. Thomas's Hospital Clinic, while undergoing treatment for his infection, but apparently he received no instruction or information in regard to the prevention of venereal disease, and I think it is now universally agreed that the best hope of diminishing venereal disease lies in preventive, rather than curative, medicine.—I am, etc.,

London, W., Dec. 9th. H. WANSEY BAYLY.

SPINAL ANALGESIA.

SIR,—I reply with great pleasure to the letter (in the BRITISH MEDICAL JOURNAL of November 12th) of Mr. Stanley Rowbotham, especially because it gives me an opportunity of correcting a stupid mistake made by me in my communication of November 5th (p. 745).

The ampoules contain a 10 per cent. solution of stovaine billon, to which is added a 10 per cent. solution of sodium chloride. The ampoules generally contain 3/4 c.cm., which is equivalent to 7½ centigrams of stovaine (my maximum dose). Thus, 1 c.cm. of the mixed solution would contain 10 centigrams of stovaine and 0.1 c.cm. = 1 centigram. Therefore a decimal point must precede all the quantities given in the original article: thus a double hernia would require 0.7 to 0.75 c.cm., rectal operations 0.5 c.cm., and so on. So that the actual quantity of fluid injected is comparatively small.

Now I answer seriatim Mr. Rowbotham's pertinent questions:

1. The solution strength is 10 per cent. stovaine.

2. In the ampoule there is an addition of 10 per cent. sodium chloride solution. I tried the heavy glucose solution for a brief period during the war, but we all satisfied ourselves that it much augmented the subsequent headache. The position during the operation is indifferent. I find no difficulty or danger with the patient in the Trendelenburg position. If the operation to be performed is high up, and if the higher interspaces are difficult to find, I inject the stovaine in the highest accessible interspace and immediately lower the patient's head till the operation begins.

3. I believe that strychnine is of definite value both as heart and nerve tonic. We operate on many patients in a very poor condition from bilharzia infiltration and tumours along the descending colon, and find that the addition of strychnine is quite helpful.

May I be allowed to add that, as it is difficult in a JOURNAL article to combine brevity with clearness, I shall be happy to answer any inquiries made privately, even in meticulous detail.—I am, etc.,

A. MORRISON.

Ex-Deaconesses' Hospital,
Alexandria, Nov. 27th.

HOSPITAL POLICY.

SIR,—I observe with much interest that the Leicester motion has once more occupied the attention of hospital staffs in London,[1] and seems to be near its death at last, because, as Dr. Couzens says, "we have seen the error of our ways." The history of this proposal may with advantage be recalled ere it becomes extinct:

On December 21st, 1920, a large conference of staffs of hospitals,[2] having exhausted the morning in veneration and applause of the voluntary system, spent a short time in the afternoon in hurriedly endorsing a resolution which, in the opinion of the able Cave Committee, which held twenty-eight meetings and examined ninety-three expert witnesses, many being eminent medical men, would "endanger the future of the voluntary hospitals." Indeed, this Committee quoted with approval the opinion that "the bottom would drop out of the voluntary system." Moreover, this same Conference, having in the morning by immense majority rejected on the *score of sentiment* the able arguments of Dr. Peter Macdonald, although they allowed them to be logical, proceeded in the afternoon on the *score of logic* to endorse, also by huge majority, the most crudely unsentimental proposition ever put before the staffs of hospitals in this country. Only two persons besides myself had the temerity to reject the counsel of the Chairman that this resolution should be unanimous, and I alone protested against it in the JOURNAL.[3] The next stage in the propagation of this idea was an attempt to exploit it in Scotland,[4] but there the staffs of hospitals rejected it forthwith. Moreover, it failed equally in Brighton.

In no way discouraged, its sponsors revived it at Newcastle.[5] Here, after a stormy career, in which its supporters seemed to vie with one another in apologies for their unhappy position, it took precarious root, and the staffs of hospitals everywhere were formally requested to commend it to their committees. It would be interesting to learn how many really did so, and what happened if they did. Further, the Representative Body, after short discussion (in which, of course, no layman took part), proceeded to inform the Cave Committee that they were quite wrong. I am tempted to wonder what would happen were the position reversed. Let us suppose that a committee of medical experts, selected by a Cabinet Minister, held twenty-eight meetings, and examined ninety-three accredited witnesses, and were then told by a body of laymen, many of whom had made no special study of the subject in debate, who held but one meeting, and called no medical witnesses, that they—the medical committee—did not know their business. What uproar would arise in the medical camp! I note, however, that the Cave Committee are not disturbed—and, indeed, they have no need to be.

Now, is it not time that the profession recognized the futility of solemnly meeting and seriously formulating among themselves unpractical resolutions upon questions most intimately affecting the life, health, and pockets of the laity—questions, moreover, which will, as a matter of hard fact, be ultimately decided by laymen, and that, perhaps, with little reference to us? Surely it would be better to invite these interested laymen to our conference at first, instead of waiting to be, figuratively, kicked downstairs by them afterwards, which is the usual result of this short-sighted policy.

I would suggest that at the next Hospital Conference two representatives be invited from each hospital, *one of whom should be a layman.* I fear, however, that no chairman would have the hardihood to invite such a conference to pass with unanimity that misguided invention—the resolution of Leicester.—I am, etc.,

Chichester, Dec. 5th. G. C. GARRATT.

DISINTOXICATION IN DIABETES AND GOUT.

SIR,—In the account of the discussion on Dr. Guelpa's lecture, printed on p. 989, it is stated that I referred to the writing of Bret Harte. I should have referred to Mark Twain, not Bret Harte. The overeating sailor, suffering from "crops" of boils, who was cured owing to a shipwreck

[1] BRITISH MEDICAL JOURNAL, Supplement, November 26th, p. 134.
[2] Ibid., Supplement, January 1st, p. 1.
[3] Ibid., January 1st, p. 21, and August 27th, p. 337.
[4] Ibid., Supplement, February 25th, p. 51.
[5] Ibid., Supplement, July 30th, p. 70.

and the great reduction in his food which it necessitated, figures in Mark Twain's *My Début as a Literary Person*. But see also his *At the Appetite-cure*.—I am, etc.,

F. PARKES WEBER.

London, W., Dec. 10th.

CLAYDEN v. WOOD-HILL.

SIR,—The following subscriptions and promises have been received to the Wood-Hill Fund in addition to those recorded in the first list, which was published in your issue of December 3rd. There is plenty of opportunity for further subscriptions.—I am, etc.,

HAMILTON A. BALLANCE,
Honorary Treasurer.

All Saints Green, Norwich,
Dec. 12th.

Amount previously acknowledged, £196 19s.

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Mr. N. Blake Odgers, Northampton
Mr. Hunter F. Tod, London
The Wrekin Medical Club (per Dr. George Mackie, Wellington)

£2 2s.

Mr. John Shepheard, North Walsham
Dr. C. S. Pantin, Douglas
Dr. John Uhthoff, Bournemouth
Mr. Guy B. Nicholson, Hull
Mr. E. J. C. Dicks, M.B.E., Framlingham
Mr. H. N. Baron, Orford
Dr. G. C. Gaynor, Wymondham
Mr. Charles F. Gross, Wickham Market
Mr. Vincent P. Tighe, Dublin
Mr. Mark R. Taylor, Norwich
Mr. Henry Wyllys, Great Yarmouth
Dr. Dora Colebrook, Cambridge
Mr. C. H. Andrews, Norwich
Mr. W. E. Wyllys, Belton
Dr. W. F. Addey, Ipswich
Dr. John Attlee, London
Mr. Francis Barwell, Mildenhall
Mr. E. P. Hughes Dudley, Caxton
Dr. Herbert Cook, C.B.E., Cardiff
Mr. C. P. Crouch, Weston-super-Mare
Dr. A. J. Campbell, Duns
Dr. Cyril E. Harrison, North Elmham
Mr. Edward V. Perry, O.B.E., Reepham
Mr. F. A. Martin Flegg, South Woodford
Dr. H. Mallins, Watton
Dr. Batterbury and Partners, Wimborne
Dr. J. S. Hinnell, O.B.E., Bury St. Edmunds
Dr. H. M. Hart-Smith, Southwold
Mr. A. M. Vann, Durham
Dr. Louis Macpherson, Edinburgh

£2 2s.

Dr. Cyril E. Harrison, North Elmham
Mr. Edward V. Perry, O.B.E., Reepham
Mr. F. A. Martin Flegg, South Woodford
Dr. H. Mallins, Watton
Dr. Batterbury and Partners, Wimborne
Dr. J. S. Hinnell, O.B.E., Bury St. Edmunds
Dr. H. M. Hart-Smith, Southwold
Mr. A. M. Vann, Durham
Dr. Louis Macpherson, Edinburgh

£2.

Mr. J. E. Chalmers, Castleton

£1 1s.

Dr. Ian M. Jefferies, London
Mr. Reginald Cock, London
Dr. P. R. Bolus, Upper Norwood
Dr. G. MacLellan Blair, London
Dr. Enid Calder, Lowestoft
Dr. Darley Wynne, St. Faiths
Dr. C. A. O. Owens, Long Stratton
Dr. Geo. Master, Bury St. Edmunds
Dr. Bernard Batt, Bury St. Edmunds
Mr. E. H. Worth, Streatham
Dr. W. W. Floyer, Egham
Dr. W. Black Jones, Builth Wells
Dr. J. C. Jones, Pensilva
Mr. M. C. Moxham, Aldborough
Dr. A. G. Hamilton, Chester
Dr. J. Delpratt Harris, Exeter
Mr. G. H. Hunter, Haughley
Mr. Alfred E. Sears, Blackheath
Dr. Thomas C. Blackwell, Oxshott
Dr. A. M. Watts, Broadstairs
Dr. William J. Ashby, Aylesbury
Mr. A. E. Ironside, M.C., Ashtead
Mr. Wm. F. Haslam, Birmingham
Dr. J. S. Manson, Warrington
Dr. Charles J. Girling, Salisbury
Dr. Dudley G. Greenfield, Rushden
Dr. H. Laird Pearson, Birkenhead
Mr. Philip Talbot, Stalybridge
Mr. H. B. Walker, M.C., Minehead
Mr. R. Loy Wilcox, Hemel Hempstead
Dr. Frank W. Melvin, M.B.E., Oswestry
Dr. Joseph Walker, Bootle
Dr. W. J. Dewar, Arbroath
Dr. Francis C. Bottomley, O.B.E., Bournemouth
Dr. J. Alford Andrews, Bovey Tracey
Dr. C. H. Attenborough, Frimley
Dr. John Fletcher, Fulham
Dr. Wortley Quait, Mundesley
Dr. George Black, Tomintoul
Mr. T. Walsh Tetley, Kirby Moorside
Dr. Alfred Cox, O.B.E., London

£1.

Mr. T. A. Murray, Penketh
M.E.M.C., Kensington
Dr. R. E. Paterson, Methlick

10s. 6d.

Dr. R. W. Rix, Sudbury

SINCE the removal of the Tropical Diseases Bureau to the buildings occupied by the London School of Tropical Medicine the libraries of the two institutions have been united. The common library, which is known as the Tropical Diseases Library, is administered by a committee representing both institutions as well as the Seamen's Hospital Society, who are the trustees. The aim of the Tropical Diseases Library is to promote the study of tropical medicine and hygiene generally, and the Library and Reading Room are open daily from 9 a.m. to 6.30 p.m. (except on Saturday, when they close at noon) to all members of the profession who are interested in those subjects.

Universities and Colleges.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—R. Abramsky, J. C. Adam, C. S. Appleyard, E. Arosemena, C. G. Auld, C. T. B. Benson, L. R. Bergson, Susan A. Binnie, J. M. Blair, R. P. Bliss, J. M. Bonar, G. Brewster, Agnes G. Brough, D. L. Brown, C. Brownlee, W. S. Burr, K. F. Caird, A. Campbell, D. Campbell, G. G. Campbell, C. G. Catto, C. H. F. de Chalus, E. Clark, D. R. Clarke, Matilda L. Craig, D. R. Cramb, J. C. Cruickshank, A. H. Deighton, J. A. Douglas, A. MacG. Duff, Jeannie P. Dunn, Katrine Dunn, Evelyn B. G. Ewen, G. B. Flint, Charlotte E. Forsyth, J. A. Fraser, Eileen R. Freeman, F. L. A. Gacé, Marjorie Geen, O. S. Gibbs, N. Giblin, Doris M. Gibson, Helen E. Gibson, A. R. Gilchrist, I. S. Hall, T. Harrison, Isabella M. Hay, W. B. E. Hughes, E. J. Hunter, R. H. R. Innes, B. Isaacson, Inez M. Y. M. Jenkins, C. I. I. Jones, *J. O. Kelly, Marjorie C. Kerr, A. King, J. Lovius, P. J. M'Diarmid, Jane W. Macdonald, W. S. Macdonald, G. S. MacKay, G. W. J. Mackay, J. C. MacKay, H. D. M'Kinna, H. M'Nair, J. W. Mason, *D. S. Middleton, I. C. Middleton, Ann L. Morrison, Q. M. Musa, S. S. Nicholson, G. Ogilvie, J. W. T. Patterson, H. R. Potter, A. M. W. Rae, L. Ratnayake, W. B. Reid, C. A. Robson, A. Sanders, E. L. Sanders, G. G. Sanders, Margaret M. Sands, M. N. Sanyal, G. S. Scott, C. M. Seward, J. M'D. S. Slater, A. T. Sloan, T. R. C. Spence, G. D. Steven, F. M. Stewart, A. Stuart, A. Sutherland, A. K. Tampi, Marion C. Taylor, L. Teitelman, D. W. C. Tough, G. A. Velluot, K. Vullakki, G. B. Walker, J. Walker, P. K. Walker, Sarah B. H. Walker, K. B. Williamson, *A. J. Wilson, J. T. Wilson, J. H. Wright.

Forensic Medicine.—Margaret S. R. Armstrong, Lilias F. E. Begg, Jane G. H. Burnet, Eleanor M. Cadman, J. C. Caird, Mary C. Campbell, J. F. Cunningham, R. T. Deas, Marjory H. Ewing, L. S. Frost, Alice J. Gray, L. P. Greson, V. L. P. Hayes, J. M. Henderson, E. G. Hunter, S. Lewenson, W. M. Lloyd, D. T. M'Ainsh, Annabella M'Garrity, Elizabeth M. Mackay, Marjorie C. Mackintosh, Grace J. Marshall, C. L. L. Murray, J. R. Purves, W. M. Ross, R. M. Saunders, M. Segal, A. J. Shedden, M. F. de Silva, Doreen Stranger, Charlotte E. W. Thompson, C. B. Thomson, M. S. Toukhy, Kathleen M. Turner, Elsie M. Walker, H. H. F. Watt, I. G. Williams, J. Williams.

Public Health.—Lilias F. E. Begg, T. A. Cochrane, R. T. Deas, Marjory H. Ewing, H. Greenberg, L. P. Greson, B. T. Halliwell, Margaret M. R. Hamilton, V. L. P. Hayes, J. M. Henderson, E. G. Hunter, R. G. Inkster, S. Lewenson, D. T. M'Ainsh, Elizabeth M. Mackay, J. R. Purves, F. L. Rifkill, W. M. Ross, R. M. Saunders, M. Segal, A. J. Shedden, I. D. Stronach, F. M. Stuart, Charlotte E. W. Thompson, Elizabeth N. Thompson, H. H. F. Watt, I. G. Williams.

* Passed with distinction.

UNIVERSITY OF BRISTOL.

THERE was a large attendance in the Council Room at the University of Bristol on Friday, December 2nd, when Emeritus Professor C. Lloyd Morgan, D.Sc., F.R.S., was presented with his portrait, a gift from friends, colleagues, and students, both past and present. The portrait was painted by Mr. Anning-Bell, A.R.A.

UNIVERSITY OF MANCHESTER.

THE following appointments have been made: J. P. Buckley, M.A., M.D., M.S., F.R.C.S., Lecturer in Regional Surgery; J. M. W. Morison, M.B., C.M., Lecturer in Applied Anatomy; and T. H. Oliver, M.D., Lecturer in Clinical Medicine.

UNIVERSITY OF WALES.

THE Council of University College of South Wales and Monmouthshire has appointed Dr. Ewen J. Maclean Professor of Obstetrics and Gynaecology in the University of Wales in connexion with the Welsh National School of Medicine, Cardiff.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

AT the annual meeting of the Royal College of Physicians of Edinburgh, held on December 1st, Sir Robert Philip, M.D., LL.D., was elected President for the ensuing year. The other office-bearers for the year were appointed as follows: Vice-President, Dr. Harry Rainy; Councillors, Drs. John William Ballantyne, John Macpherson, George M. Robertson, Robert Thin, and James Lamond Lackie; Treasurer, Dr. Norman Walker; Secretary, Dr. J. S. Fowler; Honorary Librarian, Dr. John William Ballantyne; Curator of the Research Laboratory, Dr. J. J. Graham Brown.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on December 8th, when Sir Anthony Bowlby, President, was in the chair.

The diploma of Fellow was granted to the following twenty-six candidates found qualified at the recent examination:

A. J. McNair, V. E. Negus, M. L. Treston, N. St. J. G. D. Buxton, L. H. W. Williams, R. C. Davenport, G. I. Evans, D. C. Norris, E. I. Lloyd, L. B. Goldschmidt, Marian N. Bostock, Eleanor J. Partridge, R. B. Green, A. D. Wall, H. Reid, A. B. K. Watkins, R. Y. Paton, L. H. Appleby, G. G. Bruce, W. H. Bleaden, G. A. Brookes, H. W. B. Cairns, C. M. Finny, A. H. Heslop, G. I. Strachan, D. McK. Sutherland.

The Licence in Dental Surgery was granted to sixty-three candidates.

Sir Anthony A. Bowlby and Sir John Bland-Sutton were re-elected to represent the College on the Conjoint Board of Scientific Studies.

The President reported that he attended in the lecture theatre of the College on Thursday, November 17th, the day appointed

for the annual meeting of Fellows and Members, and that, as the required quorum of thirty was not present at the expiration of fifteen minutes from 3 p.m., the hour for which the meeting had been summoned, he had announced that the meeting could not be held. The President referred to certain irregular proceedings which appeared to have taken place on this occasion after his withdrawal from the theatre, and suggested that it might be a matter for the future consideration of the Council as to whether, or not, any steps should be taken in view of these irregular proceedings.

The matter was referred to a committee to consider and report to the Council in regard to the irregular proceedings to which the President had called attention.

A vote of thanks was passed to Mr. H. J. Waring, the representative of the College on the General Medical Council, for his reporting the proceedings of the General Medical Council at their recent session.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

THE following have, after examination, been admitted as Fellows of Faculty: D. McIntyre, O. H. Mavor, J. I. Russell, D. Smith, D. Steven, W. R. Wiseman.

Obituary.

THOMAS MACQUEEN, M.B., C.M.EDIN.,
Eastbourne.

BY the death of Dr. Thomas MacQueen, who passed away on December 1st at Eastbourne, aged 70 years, the local medical profession has lost one of its oldest and most respected members, and the town one of its most esteemed citizens.

Born at Crofts, Dalbeattie, Kirkcudbrightshire, in 1841, Dr. MacQueen received his medical education at Edinburgh University, graduating M.B., C.M. in 1873. Thereafter he filled the positions of resident surgeon, Queen's Hospital, Birmingham, and resident medical officer, Royal Hospital for Sick Children, Edinburgh. In the Russo-Turkish war of 1877–78 he served as one of the surgeons with the Stafford House Society. In 1879 he settled in Eastbourne, joining in the partnership of an extensive general practice. He was for many years one of the medical officers on the honorary acting staff of the Princess Alice Memorial Hospital, and at the time of his death he was on the honorary consulting staff.

Ever since he underwent a serious operation, in 1910, which was followed by a protracted convalescence, Dr. MacQueen never recovered his former vigour and buoyancy, and although he continued, with the assistance of his son, who joined him in partnership in 1919, to attend to some of the work of the practice, it was evident of late to his friends that the remaining term of his life's span was rapidly drawing to a close. But those of his fellow members who saw him at the meeting of the Division of the British Medical Association the day before his death never contemplated that the end was so near at hand. He was a past president of the Eastbourne Medical Society, a past chairman of the Eastbourne Division of the Association, and always took a keen interest in the welfare of his profession. He also took an active interest in communal affairs, was a member of the Town Council from 1892 to 1895, when he rendered excellent service on the Sanitary Committee, and was an ardent Freemason.

A colleague writes: "A typical Scot, of ample physical proportions, genial, buoyant, unassuming, sympathetic, full of common sense and brimful of humour, withal intolerant of everything savouring of cant and hypocrisy, Dr. MacQueen possessed a sterling character which, consistently displayed during the forty-two years of his association with the affairs of Eastbourne, so endeared his personality in the affectionate esteem and regard of all classes of the community that his death is now universally regretted. Especially will his loss be irreparably felt by those in the humbler spheres of life who have appreciatively regarded his patient and assiduous services, never-failing courtesy, ever-ready sympathy and many unostentatious acts of kindly benevolence with feelings of gratitude. By those who knew him best—and his intimate friends were many—it was realized that he never harboured a grievance nor cherished malice against anyone, and it can truthfully be said that at the end of a long and honourable career the vital spirit of Thomas MacQueen quits this mundane sphere without leaving an enemy behind."

JOHN SCOTT, M.A., M.D.,
Late Physician to the Southern Hospital for Women and Children, Manchester.

WE regret to record the death of Dr. John Scott, M.D., practitioner in Manchester, at the residence of his son, Dr. James Bethune Scott, Abridge, Essex, in the 74th year of his age.

Dr. Scott was born at Aberdeen in 1847, and attended the grammar school there, where he was the school medallist. At Aberdeen University he received the degree of M.A. in 1866, the degrees of M.B., C.M. in 1873, and that of M.D. in 1891.

After acting for a brief period as assistant to Dr. McWilliam in Huntly and as medical officer, South Ronaldsay, Orkney, he removed to Manchester in 1876. He was for many years in partnership there with his brother, the late Dr. Benjamin Scott. In 1918 he underwent an operation from which he never sufficiently recovered to resume active work. In 1880 Dr. Scott became physician to the Southern Hospital for Women and Children, and to the Manchester Maternity Hospital. When these institutions were amalgamated with St. Mary's under the name of St. Mary's Hospitals, he continued his work in the children's and the maternity wards until he retired in 1918. He was lecturer to midwives and examiner to the Central Midwives Board for many years, during which he also served the University of Manchester as lecturer on vaccination. He was a member of the North of England Obstetrical and Gynaecological Society from its beginning, and as local secretary arranged the Manchester meetings and dinners of the society. He was thus very well known in northern obstetric circles, and was universally loved and respected as one who cherished all that was courtly and chivalrous in his dealings not only with his colleagues but with students, nurses, midwives, and the hospital staff of all ranks.

Dr. Scott endeared himself to his patients and friends by his sympathetic interest, his delightful humour, and cheerful disposition. He was an accomplished classical scholar, and never lost his taste for the masters of Greek and Roman literature. He was also well versed in French literature and history. Dr. Scott is survived by his widow and his son, Dr. James Bethune Scott, M.C.

WE regret to record the death of Dr. ROGER BERNARD BURKE, which took place at Plymouth on November 29th in his fifty-eighth year, from pneumonia following an operation. Dr. Burke received his medical education at Queen's College, Cork, qualifying with the diplomas of L.R.C.P. and L.R.C.S.Edin. in 1888, and he began practice in Plymouth about thirty years ago. He held the posts of honorary anaesthetist to the South Devon and East Cornwall Hospital and to the Ear and Throat Hospital, Plymouth, and during the war was on the staff of the Stoke Military Hospital. He was an active member of the British Medical Association, and at the time of his death was a member of the executive committee of the Plymouth Division. In his younger days Dr. Burke gained great distinction in Ireland as an athlete, and he held more than one Irish championship. He was very popular alike with all classes of the population and with his fellow practitioners; he was devoted to all kinds of outdoor sports, was a golfer, and rode to hounds. He was twice married, and is survived by his widow, two daughters, and three sons.

THE *Deutsche medizinische Wochenschrift* states that the medical profession in Germany lost 1,675 of its members by death in the war, while 2,200 were wounded.

THE late Mr. Frederick William Gorst of Hayton, Lancs, has by his will bequeathed £500 each to the Liverpool Royal Infirmary, the Liverpool Northern Hospital, the Liverpool Southern Hospital, and the Liverpool Stanley Hospital, and £250 each to the Liverpool Consumption Hospital and the Liverpool Children's Hospital.

UNDER the will of the late Miss Frances Elizabeth Hughes the Ramsgate General Hospital and Seaman's Infirmary receives £1,000 to endow a Frances Elizabeth Hughes and John Davies Hughes bed. The testatrix has also bequeathed £2,000 to Dr. Robert Grieve Hicks of Ramsgate in recognition of his long-continued kindness to her.

Medical News.

AN International Society of Medical Hydrology was founded at a meeting at the Royal Society of Medicine on December 9th, with a preliminary membership of 71 medical men, from 13 countries, engaged or interested in medical hydrology. Delegates from France, Italy, and Holland were present. The following were elected representatives for their respective countries: Belgium, Dr. R. Wybauw; Czecho-Slovakia, Dr. Isidore Müller; France, Dr. Paul Ferreyrolles; Great Britain, Dr. Wilfrid Edgecombe; Holland, Professor J. Van Breemen; India, Dr. H. D. Dastur; Italy, Professor Luigi Devoto; Japan, Dr. Goichi Fujiyam; New Zealand, Dr. Arthur Herbert; Norway, Dr. T. W. Knudtzon; Switzerland, Dr. de la Harpe; United States of America, Dr. Guy Hinsdale. They will collate and present to the society, by means of an international journal, the clinical and experimental work in each country bearing upon the medical action and uses of waters and baths. Dr. Buckley of Buxton and Dr. Ferreyrolles of La Bourboule were elected honorary editorial secretaries and Dr. Fortescue Fox president.

AT a meeting of the Manchester Clinical Society, held in the Physiological Department of the University on November 17th, the president, Dr. G. R. Murray, announced that the subject of Professor Leonard Hill's paper in March would be on the physiological action of light and its uses as a therapeutic agent. Dr. Lamb spoke on alveolar air, its relations to respiratory processes and to blood; and demonstrated the various methods of taking alveolar air. Professor Hill discussed the carriage of CO_2 by the blood, and the acid base ratio, compensated and uncompensated. Drs. Lamb and Robinson discussed a combination in which there might be a disturbance of the acid base ratio in the blood.

THE King has commanded that the Great Northern Central Hospital, Holloway, shall henceforth be known as "The Royal Northern Hospital."

THE Committee of the Bristol Royal Infirmary has asked Lieutenant-Colonel Percy G. Robinson, D.S.O., to act as president of the institution, with a view to his election by the governors in due course, in succession to Mr. H. H. Wills, who recently resigned for reasons of health. Colonel Robinson is a director of Messrs. E. S. and A. Robinson, Ltd., and served with much distinction in the war. It shows an enterprising spirit in the governors of such an important hospital to choose as their president-elect a young man who is not only an active member of a big business but well known throughout the district as an all-round sportsman and county cricketer.

AT a meeting of the School Medical Group of the Society of Medical Officers of Health, held in London on November 19th, it was decided to make representations in the appropriate quarters advising that the Minister of Health should undertake all the powers and duties now delegated to the Board of Education with respect to medical inspection and treatment of children and young persons, as was the expressed wish of Parliament during the passage of the Ministry of Health Act, 1919.

THE annual dinner of the Epsomian Club was held at the Trocadero Restaurant on December 8th, with Dr. H. E. Haynes in the chair. After the health of the King had been honoured Dr. Haynes proposed "*Floreat Epsomia*." He reviewed the history of the college from its foundation, and gave interesting reminiscences of his own old school-days there. He said that the school had never been so flourishing as it was to-day, and much of its success was due to the present head master. The Rev. W. J. Barton, head master of Epsom College, replied to the toast. He said that one of the features of the school at present was the great success of the Officers' Training Corps, the percentage of successful candidates for O.T.C. certificates at Epsom being the best in England. The rebuilding of the nave of the college chapel, which was to be the Epsom war memorial, was to be commenced in the near future, but a considerable sum of money was still required for the purpose. He said that although the school was successful alike in work and play, he hoped to be able to do something more to develop the intellectual interests of the boys, most of whom at present seemed to spend their holidays repairing motor cars and motor cycles. The toast of "The Visitors" was proposed by Dr. H. F. Ealand in a characteristically witty manner. He set out, as he said, to "pull the legs" of the different guests, a feat which he achieved in no uncertain fashion. The toast was responded to by Sir Edward Pollock, Solicitor-General, who spoke of the difference in the modern developments of school life as contrasted with his own schooldays. The health of the Chairman was proposed by Sir D'Arcy Power, and at the conclusion of the dinner the school song was sung with much enthusiasm.

THE house and library of the Royal Society of Medicine will be closed from Friday, December 23rd, until Tuesday, December 27th, both days inclusive.

THE annual dinner given by the Medical Committee of the Cancer Hospital was held at the Hotel Cecil on the evening of December 8th, under the chairmanship of Sir Charles Ryall, C.B.E., the senior surgeon. In proposing the toast of "Prosperity to the Cancer Hospital," the Chairman referred to the breaking down in recent years of the barriers between the various hospital staffs of the metropolis, and the participation of the Cancer Hospital in the scheme of post-graduate education. The finances of the institution, he said, were still holding up in the anxious times that all voluntary hospitals were now going through. Sir Thomas Horder, physician to the hospital, in proposing the health of the guests, welcomed each visitor in a few apt words, and coupled with the toast the names of Sir James Allen, K.C.B., High Commissioner for New Zealand, Sir Kingsley Wood, M.P., Parliamentary Private Secretary to the Minister of Health, and Sir Percival Horton-Smith Hartley. Sir James Allen, in his acknowledgement, expressed the gratitude of New Zealand to the medical schools of Great Britain for the opportunities given to its medical students and graduates and the welcome they received; Sir Kingsley Wood defended the Ministry of Health's attitude towards the voluntary hospitals; and Sir Percival Hartley spoke of the friendly relations that exist between the Cancer Hospital and its near neighbour, the Brompton Hospital for Consumption, of whose Medical Committee he is chairman. The health of the Chairman was proposed in warm terms by his colleague, Mr. Cecil Rowntree, F.R.C.S., who made the arrangements for a very enjoyable evening.

THE Medical Golfing Society has been carried on in a more or less informal manner for twenty-three years, but it has now been decided to put it on a business footing. At a recent meeting Dr. Rolf Creasy was elected the first president; vice-presidents, a committee, and a secretary and treasurer were also elected. The annual subscription has been fixed at 10s., and is payable to Dr. Rolf Creasy, jun., honorary secretary and treasurer, 36, Weymouth Street, W. Subscriptions for 1922 may be paid forthwith. Two tournament meetings are to be held annually, and there will be team matches and other competitions for two challenge cups and two other cups. Membership, without election, is open to any gentleman on the *Medical Register* on application to the honorary secretary.

THE War Office announces that officers of the R.A.M.C. (except quartermasters) are in future to be removed from the Reserve on attaining the following ages: Surgeon-General, 60 years; Colonel, 57; and other officers, 55.

THE Livery Dinner of the Society of Apothecaries of London was held at Apothecaries' Hall, Blackfriars, on the evening of December 13th. The chair was taken by the Master of the Company, Dr. W. F. R. Burgess, O.B.E., and there was a large attendance. After the loyal toast had been honoured, the toast of the "Army, Navy and Air Force" was proposed by the Senior Warden and responded to by Vice-Admiral Sir Robert Hill, Medical Director-General, R.N. The toast of "Universities and College and the Examiners" was submitted by the Master, who gave reminiscences of the London University classes when he was a student many years ago at Guy's, and he paid a tribute to London University for what it had accomplished in raising the standard of professional education. The toast was replied to by Sir Sydney Russell Wells, M.D., Vice-Chancellor of the University of London, who dwelt on the great services rendered by the City Companies and by his own University to the cause of education; and by Mr. W. Girling Ball, on behalf of the Board of Examiners of the society. The health of the Livery and Company was proposed by the Master and responded to by Dr. Gordon Brown; and the toast of "The Guests," of whom many were present, was proposed by the Junior Warden, Dr. Thomas Wakefield, and replied to by Sir Charters Symonds. Some delightful solos and duets were sung by Miss Violet Openshaw and Mr. Bingham Watson, Clerk of the Company, with Mr. David Richards at the piano.

THE centenary of the Society of Medicine of Warsaw was celebrated on December 5th by a special meeting of the society and a reception, and on December 6th by a special service at the Church of St. Cross.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"C. W. E." is paid "a salary with free board and lodging, etc.," and has been assessed apparently on his salary plus £99 for the value of the allowances. Is this correct?

*** No; if his engagement is for a salary plus certain emoluments in kind, the value of the latter is not assessable to income tax; on the other hand, if he were appointed on the understanding that his salary was £449, of which £99 was to be deducted by or returned to his employers for value received in kind, the legal effect would be otherwise.

"W. S." inquires: (1) The rate of life assurance allowance, policy effected before the war, and total income £800 per annum, capital sum £800; and (2) in the case of alteration of amount of income does the three years' average apply.

*** (1) 3s. in the £ on the premiums, with a maximum of 7 per cent. on £800 (= £56) at 3s. for the total allowance. Finance Act, 1919, sections 26 and 32. (2) Yes, except in certain cases where the practice has changed bands during the previous three years. Rule 1 applying to Cases 1 and 2, Schd. D, Income Tax Act, 1918.

"C. H. S." acted as medical officer at a military hospital from May, 1915, to May, 1921, included the income therefrom in his general return, and has been assessed accordingly under Schedule D. Can he now claim to exclude the amounts for the purpose of his assessment for 1921–22?

*** To do so would seem to be inequitable, because that would not bring the whole of the military pay fully into assessment—for example, as a fact "C. H. S." apparently paid nothing on his military pay during the first year he received it, and he is now facing the converse case. Also it *may* be that a redistribution of the pay as a specific receipt of each financial year might increase the rates of tax payable on his other income for the years 1915–16 to 1920–21, but of course "C. H. S." has lost the benefit of the lower rate of tax for "service" pay. It would seem that the claim to the difference in the rate of tax can be made for the three years 1918–19, 1919–20, and 1920–21 to the extent to which income tax has been paid on that source of income, but that advantage *might* be swallowed up by the effect of redistribution if the gross assessments for those years were recast on the basis of putting the "pay" into a separate category.

HABITUAL HEADACHE.

"N. O." asks for suggestions for the treatment of a young married woman who has suffered from headache since childhood. The ache is frontal and vertical, and almost always commences in the mornings on waking, but may last for some days, and is not associated with sickness or nausea. All the natural functions are normal, and the eyes have been examined more than once by London specialists, who have found nothing wrong. The pain is generally a dull ache, but sometimes is typically neuralgic and very acute; these latter attacks seem quite different from the "habitual headache." Aspirin occasionally relieves, but more often not; treatment along the lines of diet was without benefit. The patient is exceptionally bright, and takes plenty of exercise and sleeps well, though much given to dreaming.

LETTERS, NOTES, ETC.

IN order to make the series of *Transactions* of the Edinburgh Medico-Chirurgical Society complete, the Librarian of the British Medical Association will be glad to receive Vol. XXXIV (1919–1920) from any member who can spare a copy; the volume is out of print.

IN our issue of October 29th (p. 715), under the heading "Tropical Medicine in the East," a list of vice-presidents of the Far Eastern Association of Tropical Medicine was given, with the areas with which they were associated. Dr. J. F. E. Bridger's name was associated with Saigon; this should have been Ceylon.

DR. HERBERT CARRE-SMITH (London, W.) writes to recommend a small case to hold four ampoule syringes made at his suggestion by the firm of Hoffman-La Roche, 7 and 8, Idol Lane, London, E.C.3. The same firm makes larger cases, but Dr. Carre-Smith has found the small case very useful; it can be carried in the waistcoat pocket, and provides sterilized solutions for injection at a moment's notice. He carries morphine (with or without atropine), strychnine, and digalen; this allows one place for any other drug preferred.

HERPES AND VARICELLA.

DR. KENNETH ANDERSON (Banwell, Somerset) writes: As showing a close connexion between these conditions the following notes may be of interest: Mrs. L. was seen on November 18th with typical herpes zoster just developing. Her child, aged 5, was seen on December 2nd with the first crop of the eruption of varicella, and a baby of 18 months also showed a few spots. Inquiry has failed to discover any other cases of varicella in the neighbourhood. Assuming that the mother infected her children, the incubation period was exactly fourteen days, which is that most usual in varicella.

COLLAPSIBLE DOUCHING APPARATUS.

MR. A. ALLPORT (London) writes: So many patients who are taught to irrigate themselves complain of the difficulty of concealing the necessary apparatus, especially in taking it from their bedroom to the bathroom, without disclosing a bulky parcel. To obviate this I have devised a collapsible vessel made of rubber, which will fold up and go into the pocket, but which can be extended and made rigid by means of a vulcanite stay or prop. It is graduated inside up to two pints and is worked on the siphon principle, the siphonage being started by a rubber suction bulb. The suction bulb may be fitted to the Janet's nozzle, together with the rubber shield, and used as a hand syringe if required. The makers will supply this hand syringe separately if wanted. Further particulars can be obtained on application to Mr. W. G. Holman, manufacturer's agent, 29, Beauchamp Place, Brompton Road, S.W.3.

LEWIS'S LIBRARY.

MESSRS. H. K. LEWIS AND CO. have issued a pamphlet describing the growth of their establishment during the past seventy-seven years. Some interesting illustrations are included, showing the development of a little bookshop, above which Mr. Lewis lived when he began in 1844, into the well known publishing and bookselling business of to-day with its many branches, one of which, the circulating library, has earned for the firm the description of "the Mudies of the medical world."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 31, 32, 33, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 30 and 31.

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